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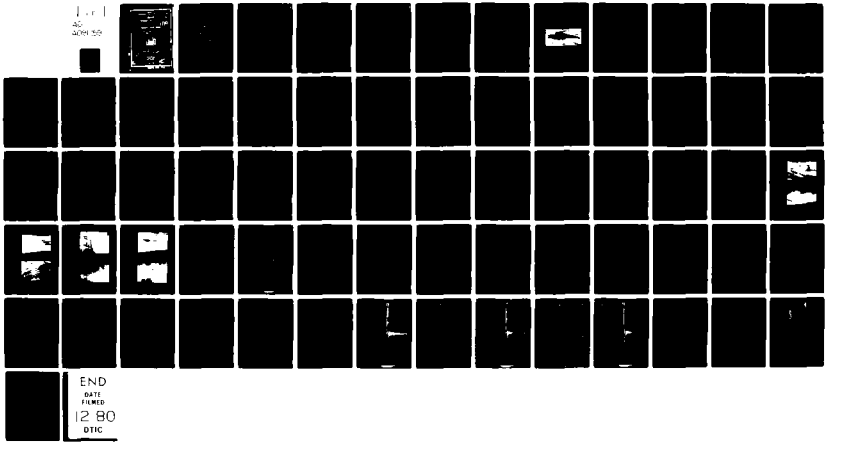

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BUSH RIVER BASIN

UNNAMED TRIBUTARY OF OTTER POINT CREEK, HARFORD COUNTY

MARYLAND

(6) National Dam Inspection Program

EDGEWATER VILLAGE

(NDI-ID [redacted] MD-83)

[redacted]

PHASE I INSPECTION REPORT

NATIONAL DAM INSPECTION PROGRAM

(11) Jul 80 (12) 66

Prepared for:
DEPARTMENT OF THE ARMY
Baltimore District Corps of Engineers
Baltimore, Maryland 21203

(15) DACW31-80-C-0050

By:
RUMMEL, KLEPPER & KAHL
Consulting Engineers
1035 N. Calvert Street
Baltimore, Maryland 21202

(10) Edward J. Kriegler

July 1980

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PREFACE

This report is prepared under guidance contained in the Recommended Guidelines for Safety Inspection of Dams, for Phase I Investigations. Copies of these guidelines may be obtained from the Department of the Army, Office of Chief of Engineers, Washington, D.C. 20314.

The purpose of a Phase I investigation is to identify expeditiously those dams which may pose hazards to human life or property. The assessment of the general condition of the dam is based upon visual observations and review of available data. Detailed investigations and analyses involving topographic mapping, subsurface investigations, material testing, and detailed computational evaluations are beyond the scope of a Phase I investigation; however, the inspection is intended to identify any need for such studies which should be performed by the owner.

In reviewing this report, it should be realized that the reported condition of the dam is based on observations of field conditions at the time of inspection along with data available to the inspection team. In cases where the reservoir was lowered or drained prior to inspection, such action, while improving the stability of the dam, removes the normal load on the structure and may obscure certain conditions which might otherwise be detectable if inspected under the normal operating environment of the structure.

It is important to note that the condition of the dam depends on numerous and constantly changing internal and external factors which are evolutionary in nature. It would be incorrect to assume that the present condition of the dam will continue to represent the condition of the dam at some point in the future. Only through frequent inspections can unsafe conditions be detected and only through continued care and maintenance can these conditions be prevented or corrected.

Phase I inspections are not intended to provide detailed hydrologic and hydraulic analyses. In accordance with the established Guidelines, the spillway design flood is based on the estimated "Probable Maximum Flood" for the region (greatest reasonably possible storm runoff), or fractions thereof. The spillway design flood provides a measure of relative spillway capacity and serves as an aid in determining the need for more detailed hydrologic and hydraulic studies, considering the size of the dam, its general condition and the downstream damage potential.

The assessment of the conditions and recommendations was made by the consulting engineer in accordance with generally and currently accepted engineering principles and practices.

BUSH RIVER BASIN
UNNAMED TRIBUTARY OF OTTER POINT CREEK, HARFORD COUNTY

MARYLAND

EDGEWATER VILLAGE DAM

NDI ID NO. MD-83

EDGEWATER VILLAGE COMPANY

PHASE I INSPECTION REPORT

NATIONAL DAM INSPECTION PROGRAM

July 1980

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PHASE I INSPECTION REPORT
NATIONAL DAM INSPECTION PROGRAM

BRIEF ASSESSMENT OF GENERAL CONDITION AND RECOMMENDED ACTION

Name of Dam:	Edgewater Village Dam NDI ID No. MD-83
Size:	Small (29.5 feet high, maximum; 171 acre-feet)
Hazard Classification:	High
Owner:	Edgewater Village Company 404 N. Liberty Street Suite 511 Baltimore, Maryland 21201
State Located:	Maryland
County Located:	Harford
Stream:	Unnamed tributary of Otter Point Creek
Dates of Inspection:	June 19, 1980 and July 15, 1980

Based on the visual inspection, available records, past operational performance, and in accordance with the guideline criteria established for these studies, Edgewater Village Dam is judged to be in fair condition.

The water level in the Edgewater Village lake is maintained at approximately elevation 53.7, the elevation of the V-notch weir constructed in the drop inlet spillway. The water level can also be controlled by a manually operated sluice gate located in the intake culvert of the overflow structure. The outflow is conveyed through the embankment in a 6 foot diameter concrete conduit and is discharged into an unnamed tributary of Otter Point Creek. Based on the dam crest survey, the freeboard at the time of inspection was 10 feet.

Numerous erosion gullies were noted on the crest and upstream slope of the dam. Little or no vegetation exists where the erosion was worst. Trees are growing on the upstream and downstream slopes of the dam, and numerous shrubs and small trees have taken root in cracks of the asphalt slope protection on the upstream slope of the dam. The asphalt slope protection is eroded at the water line near the left end of the dam. A small wet area was noted downstream of the toe of the dam and right of the stilling basin, but its source is not apparent. At the time of this inspection, the impounded water was turbid and it was obvious that there has been a significant amount of sedimentation in the lake.

According to the hydrologic and hydraulic analyses, the Edgewater Village Dam will pass 100 percent of the Probable Maximum Flood without overtopping and its spillway is rated adequate.

The following remedial measures are recommended to the accomplished by the owner in a timely manner:

1. Remove all woody vegetation from the embankment slopes and remove all vegetation growing on or through the asphalt slope protection.

2. Repair all erosion gullies on the dam and stabilize the eroded areas with grass.

3. Repair any cracks or eroded portions of the upstream asphalt slope protection.

4. The wet area downstream of the toe of the dam should be inspected regularly. If the wet area grows larger or if a steady stream of water starts flowing from the area, an investigation should be conducted to determine the source of the water, and if necessary, the seepage should be controlled.

5. Remove the debris which has accumulated in the bottom of the drop inlet chamber.

6. Schedule formal periodic inspections of the dam embankment and appurtenant structures.

7. A formal warning system should be developed to warn downstream residents in the event of emergencies.

Submitted by:

RUSSELL, SLEPPER & KAHL

Edward J. Zeigler, P.E.
Associate

Date: September 22, 1980

Approved by:

JAMES W. PECK
Colonel, Corps of Engineers
District Engineer

Date: 22 Sep 1980

EDGEWATER VILLAGE LAKE

AN OVERVIEW

PHASE I INSPECTION REPORT
NATIONAL DAM INSPECTION PROGRAM

EDGEWATER VILLAGE
NDI ID NO. MD-83

SECTION 1
PROJECT INFORMATION

1.1 General.

a. Authority. The Dam Inspection Act, Public Law 92-367, authorized the Secretary of the Army, through the Corps of Engineers, to initiate a program of inspection of dams throughout the United States.

b. Purpose. The purpose of the dam inspection program is to determine if the dam constitutes a hazard to human life or property.

1.2 Description of Project.

a. Dam and Appurtenances. Edgewater Village Dam, constructed in 1971, is a zoned earth fill embankment with an impervious core. The embankment is approximately 29.5' high at its maximum section and is approximately 800 feet long. The dam was constructed at the same location as an earlier dam which impounded the unnamed tributary of Otter Point Creek. Edgewater Village townhouses and apartments are constructed around the perimeter of lake.

Inflow into the lake is from the unnamed tributary of Otter Point Creek, storm water drainage from the surrounding development, precipitation falling directly on the lake, and a minor amount of surface runoff.

The flood discharge facilities for the dam consist of an overflow structure and a manually operated sluice gate located in the intake chamber of the overflow structure. The overflow structure discharges into a 6 foot outlet conduit through the dam which discharges into a plunge basin just beyond the downstream toe. The normal pool elevation of the lake corresponds to the elevation of the V-notch weir constructed in the drop inlet spillway. The lake can be lowered below the normal pool elevation by opening the sluice gate.

b. Location. The dam is on an unnamed tributary of Otter Point Creek, approximately 0.7 miles upstream from its confluence with Otter Point Creek in Harford County, Maryland. Edgewater Village is shown on U.S.G.S. Quadrangle, Edgewood, Maryland, at latitude N 39° 26' 0" and longitude W 76° 18' 30". A location map is included as Plate E-1.

c. Size Classification. Small (29.5 feet high, maximum; 171 acre-feet).

d. Hazard Classification. Four residences and two businesses located along the downstream channel could be damaged by a flood resulting from failure of the dam. Thus, a high hazard classification is warranted for Edgewater Village Lake dam.

e. Ownership. Edgewater Village Company, 404 N. Liberty Street, Suite 511, Baltimore, Maryland 21201.

f. Purpose of Dam. Recreation.

g. Design and Construction History. Construction of Edgewater Village Dam was completed in 1971. According to the typical section of the embankment shown on the contract drawings obtained from the state of Maryland Water Resources Administration, the dam is composed of zoned earthfill with an impervious core. The dam was designed by Matz, Childs & Associates, Inc., consulting engineers of Baltimore, Maryland. The primary contractor for the project was the Harry T. Campbell Company of Towson, Maryland, and concrete work was sub-contracted to John Matriciani Co., Inc. of Baltimore, Maryland. Dam construction inspection was provided by Robert B. Balter, Soil and Foundation Consultants, Inc. of Baltimore, Maryland.

h. Normal Operating Procedure. As it presently exists, the lake is maintained at or near the elevation of the V-notch weir constructed in the drop inlet spillway, approximately elevation 53.7.

1.3 Pertinent Data.

a. Drainage Area.	0.34 square miles
b. Discharge at Dam Site (cfs).	1100
c. Elevation.	
Top of Dam	64.0 (design) 63.5 (low point on crest)
Maximum Pool	59.2
Normal Pool	53.69
Upstream Invert Outlet Works	41.75
Downstream Invert Outlet Works	39.40
Maximum Tailwater	Unknown
Downstream Toe	35

d. Reservoir Length (Feet).

Normal Pool Level	1560
Maximum Pool Level	1650

e. Storage (Acre-feet).

Normal Pool Level	66
Maximum Pool Level	119
Top of Dam	171

f. Reservoir Surface (Acres).

Normal Pool	8.4
Maximum Pool	10.9
Top of Dam	12.70

g. Dam.

Type	Earthfill
Volume of Earthfill	37,000± cu.yds.
Length	800'
Height	28.5' (minimum) 29.5' (maximum)
Top Width	15'
Side Slopes	Downstream Above Edgewater Drive: 1V:3H Below Edgewater Drive: 1V:2H *Upstream: 1V:3H*
Zoning	Yes
Imperious Core	Yes
Cutoff	None
Grout Curtain	None

h. Outlet Works (6 Foot Outlet Conduit).

Length	170'
Closure	30-inch Sluice gate
Access	Intake tower

i. Spillway.

Type	Drop Inlet
Length	48'
Crest Elevation	54.1[1]
Gates	None
Upstream Channel	Lake
Downstream Channel	Outlet conduit and Stilling Basin

[1] V-notch weir constructed in drop inlet spillway at an invert elevation of 53.69.

SECTION 2
DESIGN DATA

2.1 Design.

a. Data Available. The available information was provided by the State of Maryland, Water Resources Administration. The information includes a feasibility study, a project history report, a brief construction specification, the as-built drawings of the dam, and a file of correspondence regarding the dam.

(1) Hydrology and Hydraulics. The April 1970 Edgewater Village Dams Feasibility Report and an October 26, 1970 letter to the State of Maryland, Water Resources Administration provide design criteria for the spillway.

(2) Embankment. Available information consists of as-built drawings.

(3) Appurtenant Structures. Available information consists of as-built drawings.

b. Design Features.

(1) Embankment. The embankment was constructed on the site of an older dam which impounded the unnamed tributary of Otter Point Creek. A subsurface investigation, including two test borings drilled through the old embankment, indicated that the old dam was unsuitable. Consequently, the old dam was removed by excavating to elevation +35.

According to the as-built drawings, the new dam is a zoned embankment consisting of a center core of impervious borrow. A 3-foot deep key trench is constructed at the upstream end of the impervious core. Porous asphalt concrete slope protection is constructed on the upstream slope from elevation +45 up to elevation +60. The downstream embankment is terraced to accommodate the two-lane Edgewater Drive. Examination of the plans, the dam crest surveys, and visual inspection of surrounding topography indicates that the dam is approximately 800 feet long and 29.5 feet high at is maximum section. A typical section of the dam is shown on Plate E-2.

(2) Appurtenant Structures. The appurtenant structures of the dam consist of a drop inlet spillway which includes the outlet works. The spillway, located near the center of the embankment, discharges into a 6' conduit which carries the water through the embankment and into a stilling basin. According to the as-built drawings, the 6' conduit has five anti-seep collars.

The water level in the lake can be lowered by manually opening a sluice gate located near the base of the spillway intake chamber. The sluice gate stem is located on top of the deck which covers the spillway.

c. Design Data.

(1) Hydrology and Hydraulics. The only available design data are included in the feasibility report and correspondence with the Water Resources Administration which discusses the derivation of the design floods.

(2) Embankment. No engineering data are available on the design of the embankment other than what is shown on the as-built drawings.

2.2 Construction. A brief chronology of construction is included in the, "Project History For Serene Lake, Edgewater Village, Harford County, Maryland", by the designers, Matz, Childs, and Associates. The report is dated October 11, 1971.

2.3 Operation, No records are kept of the operation of the dam or appurtenant structures.

2.4 Other Investigations. None reported.

2.5 Evaluation.

a. Availability. The feasibility report, the project history report, the brief construction specifications, the as-built drawings, and a file of correspondence regarding the dam are available.

b. Adequacy. The available information included no data which would allow the technical assessment of the embankment or appurtenant structures. Consequently, the available data is not considered sufficient to evaluate the design and construction of the dam.

SECTION 3
VISUAL INSPECTION

3.1 Findings.

a. General. The on-site inspection of Edgewater Village Dam consisted of:

(1) Visual inspection of the embankment, abutments, and embankment toe.

(2) Visual examination of the appurtenant structures.

(3) Evaluation of the downstream area hazard potential.

The specific observations are shown on Plate A-1.

b. Embankment. The general inspection of the embankment consisted of searching for indications of structural distress, such as cracks, subsidence, bulging, wet areas, seeps and boils, and observing general maintenance conditions, vegetative cover, erosion, and other surficial features. Numerous erosion gullies were noted across the crest and upstream slope of the embankment, particularly at the left end of the embankment and within a zone to the right of the drop inlet spillway. No vegetative cover exists where the erosion was noted.

The porous asphalt concrete slope protection is eroded at the water line along the left end of the dam. Numerous shrubs and small trees have also rooted on or through cracks in the asphalt, particularly at the water line. Cracks noted in the asphalt are probably caused by the growth of vegetation and freeze-thaw action.

Trees with diameters as great as 6 inches were noted along the crest and downstream slope of the embankment.

Based on random probings of the thickness of sediments deposited on the asphalt slope protection below water level, and the turbidity of the lake water, it is evident that sedimentation is not controlled.

A small wet area was noted just downstream of the toe on the right side of the stilling basin. No water was flowing from the area during the inspection. The source of the water is not apparent, but it should be noted that a residence immediately right of the outflow structure is hooked into a public sewer line as opposed to having a septic system.

The crest of the dam was surveyed and the variance in elevation was 12 inches between the high and low points. Also, the low point on the crest is 6 inches below the design crest elevation of the dam which is +64. Freeboard at the time of inspection was approximately 10 feet. Under maximum flood pool conditions, freeboard would be approximately 4.3 feet. The dam crest profile is included as Plate C-2.

c. Appurtenant Structures. With the exception of an accumulation of debris noted in the bottom of the riser, the appurtenant structures were found to be in good condition. The sluice gate was not operated during the inspection.

d. Reservoir Area. Porous asphalt concrete lines the upstream slopes of the embankment at pool level to retard erosion of the embankment. The asphalt is eroded at a few locations at the water line and is cracked in others where vegetation has taken root through the asphalt. Judging from the number of storm drains noted along the lake, a significant volume of storm drainage is discharged into the lake. A significant amount of sedimentation was noted just inside the lake, apparently a consequence of storm drainage.

e. Downstream Channel. Four residences are located immediately downstream of the embankment on the left side of the channel. The channel joins another unnamed tributary of Otter Point Creek downstream of the residences and flows under a bridge at Route 755. Just downstream of the Route 755 bridge are two businesses, a gas station and an auto parts store. The tributary continues through a box culvert beneath Route 24, and no other structures were noted in the flood plain. Based on our observations, a high hazard classification is warranted for Edgewater Village Dam.

3.2 Evaluation. The visual examination and observations of Edgewater Village Dam indicate that the embankment and appurtenant structures are in fair condition. We recommend that the erosion and vegetation problems on the embankment be corrected. We also recommend that the wet area downstream of the toe be checked periodically, and if the area enlarges or if a flow of water is noted, an investigation should be conducted to positively identify its source, and if necessary, to control the seepage.

SECTION 4
OPERATIONAL FEATURES

4.1 Procedure. There are no formal operating procedures for the dam. The lake level is maintained at or near the uncontrolled drop inlet spillway crest level. The water level in the lake can be lowered by opening the sluice gate located at the base of the spillway intake chamber.

4.2 Maintenance of the Dam. It is evident that there is little or no maintenance of the dam. The vegetation on both slopes of the embankment has not been controlled.

4.3 Maintenance of Operating Facilities. With the exception of the debris noted on the bottom of the drop inlet chamber and the unknown operating condition of the sluice gate, the appurtenant structures appeared to be in satisfactory condition. If there was routine maintenance of the facilities, however, the debris may not have accumulated.

4.4 Warning System. No formal warning system exists for the dam. Telephone communication facilities are available at residences surrounding the lake.

4.5 Evaluation. The overall maintenance condition of the dam and its appurtenant structures is considered to be fair. It is recommended that maintenance of dam and the operating facilities be accomplished on a regular basis by the Owner.

SECTION 5
HYDRAULICS AND HYDROLOGY

5.1 Evaluation of Features.

a. Design Data. The April 1970 Edgewater Village Dams Feasibility Report indicates that the reservoir spillway design was based upon an inflow design flood of 1081 cubic feet per second (cfs) resulting from a 100-year, 6-hour storm of 5.3 inches over the reservoir's 0.34-square mile drainage area. The April 1970 feasibility report employs a maximum 6-hour storm record of 7.3 inches from a gaging station on the Eastern Shore to produce an inflow design flood of 1750 cfs for establishment of freeboard available between the maximum flood pool and the top of the dam embankment. Using these design floods, revised calculations submitted to the Maryland Department of Water Resources on October 26, 1970 produced the following design elevations in feet above mean sea level:

Normal Pool (Spillway Crest): 53.00
100-Year Flood Pool Level: 57.20
Freeboard Flood Pool Level: 59.20
Top of Dam Embankment: 64.00

During construction of the reservoir, the spillway crest level was revised to Elevation 54.1 and the top of dam was maintained at Elevation 64.0. Records suggest that no additional flood routing analyses were conducted subsequent to these construction changes.

b. Experience Data. No records of maximum pool levels are available.

c. Visual Observations. Several observations made during the visual inspection of the Edgewater Village impoundment are particularly relevant to the hydraulic and hydrological evaluations.

(1) Embankment. The survey of the dam crest profile performed during the visual inspection indicates that the existing crest is slightly lower than its design elevation of 64.00 feet above m.s.l. with its low point at elevation 63.5 feet above m.s.l. The survey data for the existing crest was employed in subsequent hydraulic analyses.

(2) Appurtenant Structures. The drop inlet spillway and outlet works appears to have been constructed in accordance with record as-built drawings. However, the hydraulic head assumptions employed in the April, 1970 Edgewater Village Dam Feasibility Report for development of a discharge rating curve for the outlet works are substantially different than the actual heads that will develop based upon outlet works as-built conditions.

As a result, the discharge rating of the inlet spillway and outlet works, during flows when the outlet hydraulics control, is substantially less than that indicated in the original design data. A modified rating curve has been derived for use in subsequent hydraulic analysis.

The ability of the drop inlet spillway and outlet works to function as designed is presently hampered by the presence of debris at the base of the spillway riser.

(3) Downstream Conditions. Failure of Edgewater Village Dam could cause significant damage to the four dwellings located on Watergate Court immediately downstream from the embankment. In addition the failure may damage State Route 755 which is approximately 1600 feet downstream from the dam, and two commercial establishments adjacent to State Route 755. In keeping with the potential hazard classification criteria established by the Office of the Chief of Engineers (OCE), the downstream conditions suggest that a high hazard classification be assigned to the Edgewater Village Dam.

d. Overtopping Potential.

According to the critera promulgated by the Office of the Chief of Engineers, the recommended Spillway Design Flood (SDF) for a dam classified as "small" with a "high" hazard potential ranges between 50 and 100 percent of the Probable Maximum Flood (PMF). The Probable Maximum Precipitation (PMP) index as adjusted for the Edgewater Village Dam drainage area is 19.2 inches in 24 hours. Employing criteria established by the Corps of Engineers, Baltimore District, 100 percent and 50 percent PMF inflow hydrographs developed using the HEC-1 computer program have peaks of 1380 cfs and 690 cfs, respectively. It is important to note that the peak flow for 50 percent of the PMF derived is significantly less than the 1081 cfs design inflow previously determined in the design report for a 100-year storm. This disparity is understandable since it is recognized that the Snyder method of synthetic unit hydrograph determination employed in the HEC-1 model may produce hydrograph peaks somewhat less than those derived using other methods when applied to relatively small drainage areas where the time of concentration is relatively short. However, in accordance with guidance provided by the Corps of Engineers, Baltimore District, no adjustments have been made to the PMF's determined for the Edgewater Village reservoir to account for this disparity.

PMF inflow hydrographs were routed through the Edgewater Village reservoir for percentages ranging from 20 percent of the PMF to 100 percent PMF, with each routing starting at the spillway crest elevation of 54.1 feet above m.s.l. For the 50% PMF routing, the reservoir water level reached an elevation of 57.1 feet above mean sea level, or 6.4 feet below than low point in the dam crest. For the 100% PMF routing, the reservoir water level reached an elevation of 60.7 feet above mean sea level, remaining below the low point in the dam crest at an elevation of 63.5 feet above mean sea level. See Appendix D for a tabulation of the flood routing results.

e. Spillway Adequacy. The Edgewater Village reservoir will pass 100 percent of the PMF without overtopping, and therefore the spillway capacity is rated adequate.

SECTION 6
STRUCTURAL STABILITY

6.1 Evaluation of Structural Stability.

a. Visual Observations.

(1) Embankment. Even though numerous deficiences were noted in Section 3, none were considered to be serious relative to the stability of the dam at this time.

(2) Appurtenant Structures. The structural condition of the drop inlet spillway and associated structures is considered to be satisfactory.

b. Design and Construction Data.

(1) Embankment. The available information does not include any quantitative data to aid in the assessment of the structural stability of the dam. However, no conditions were observed that would significantly affect the stability of the dam at this time.

(2) Appurtenant Structures. Available information does not include adequate data to assess the structural adequacy of the appurtenant structures.

c. Operating Records. The structural stability of the dam is not considered to be affected adversely by the operational features of the dam.

d. Seismic Stability. The dam is located in Seismic Zone 1; and, based on visual observation, the static stability of the dam appears to be adequate; and the structure is presumed to present no hazard from earthquakes.

SECTION 7
ASSESSMENT AND RECOMMENDATIONS/REMEDIAL MEASURES

7.1 Dam Assessment.

a. Assessment. The visual observations indicate that Edgewater Village Dam is in fair condition. With the exception of the small wet area noted downstream of the toe, there is no indication that the dam is unstable. According to hydrologic and hydraulic calculations, the facility will pass 100 percent of the PMF without overtopping, and therefore the spillway capacity is rated adequate.

b. Adequacy of Information. Available information, in conjunction with the visual observations, is considered to be sufficient to make the recommendations that are given below.

c. Urgency. Measures recommended below should be accomplished in a timely manner.

d. Necessity for Additional Information. If the wet area noted downstream of the toe enlarges significantly, or if water starts flowing from the area, the owner should retain the services of a Professional Engineer to positively identify the source of the water and, if necessary, to control the flow.

7.2 Recommendations/Remedial Measures.

It is recommended that the following remedial measures be implemented by the Owner:

a. Remove all woody vegetation from the embankment slopes and remove all vegetation growing on or through the asphalt slope protection.

b. Repair all erosion gullies on the dam and stabilize the eroded areas with grass.

c. Repair any cracks or eroded portions of the upstream asphalt slope protection.

d The wet area downstream of the toe of the dam should be inspected regularly. If the wet area grows larger or if a steady stream of water starts flowing from the area, an investigation should be conducted to determine the source of the water, and if necessary, the seepage should be controlled.

e. Remove the debris which has accumulated in the bottom of the drop inlet chamber.

f. Schedule formal periodic inspections of the dam embankment and appurtenant structures.

g. A formal warning system should be developed to warn downstream residents in the event of emergencies.

APPENDIX A

VISUAL INSPECTION CHECKLIST

PHASE I

APPENDIX A
VISUAL INSPECTION CHECKLIST
PHASE I

Name of Dam: Edgewater Village County (or City): Harford County State: Maryland

NDI ID. No.: MD- 83 Type of Dam: Earth Hazard Category: Significant

Date(s) Inspection: 6/19/80 & 6/30/80 Weather: Clear Temperature: 70's

Pool Elevation at Time of Inspection: 53.8 M.S.L. Tailwater at Time of Insp. _____ M.S.L

Inspection Personnel:

J. D. Nauman

J. Wise

Review Inspection Personnel:

E. J. Zeigler

J. G. Mintiens

J. D. Nauman

J. D. Nauman Recorder

VISUAL INSPECTION
PHASE I
EMBANKMENT

VISUAL EXAMINATION OF	OBSERVATIONS	REMARKS OR RECOMMENDATIONS
SURFACE CRACKS	None	
USUSUAL MOVEMENT OR CRACKING AT OR BEYOND THE TOE	None	
SLOUGHING OR EROSION OF EMBANKMENT AND ABUTMENT SLOPES	Numerous gullies developed on upstream embankment slopes; no more than 1.0 feet deep and 1.5 feet wide. Gullies have developed where there is no vegetative cover. No sloughing noted.	Repair Gullies
VERTICAL AND HORIZONTAL ALIGNMENT OF THE CREST	Horizontal alignment satisfactory Vertical alignment varies 12"	
RIPRAP FAILURES	The asphalt slope protection is cracked in several locations where bushes and small trees are rooted through asphalt. The asphalt has eroded at several locations along the east embankment.	Repair cracked and croded asphalt

VISUAL INSPECTION
PHASE I
EMBANKMENT

VISUAL EXAMINATION OF	OBSERVATIONS	REMARKS OR RECOMMENDATIONS
JUNCTION OF EMBANKMENT AND ABUTMENT, SPILLWAY AND DAM	Satisfactory	
ANY NOTICEABLE SEEPAGE	Wet area with no noticeable flow noted right of outflow conduit downstream of toe; source is not obvious	Wet area is not result of leakage from septic system. All residences tied into public system
STAFF GAGE AND RECORDER	None	
DRAINS	None	

VISUAL INSPECTION
PHASE I
OUTLET WORKS

VISUAL EXAMINATION OF	OBSERVATIONS	REMARKS OR RECOMMENDATIONS
CRACKING AND SPALLING OF CONCRETE SURFACES IN OUTLET CONDUIT	None	
INTAKE STRUCTURE (SPILLWAY RISER)	No structural deficiencies noted. An old tire, timbers, and other debris observed at base of riser at outlet conduit entrance	Remove debris from base of riser
OUTLET STRUCTURE	Concrete pipe - No deficiencies	
OUTLET CHANNEL	Concrete channel, and plunge basin	
EMERGENCY GATE	Slide gate stem is positioned just downstream from "V" notch weir in spillway riser	Slide gate not operated during inspection. Recommend periodically checking operation of slide gate

VISUAL INSPECTION
PHASE I
UNGATED SPILLWAY

VISUAL EXAMINATION OF	OBSERVATIONS	REMARKS OR RECOMMENDATIONS
CONCRETE WEIR	N/A	
APPROACH CHANNEL	N/A	
DISCHARGE CHANNEL	N/A	
BRIDGE AND PIERS	N/A	

VISUAL INSPECTION
PHASE I
GATED SPILLWAY

VISUAL EXAMINATION	OBSERVATIONS	REMARKS OR RECOMMENDATIONS
CONCRETE SILL	N/A	
APPROACH CHANNEL	N/A	
DISCHARGE CHANNEL	N/A	
BRIDGE PIERS	N/A	
GATES AND OPERATION EQUIPMENT	N/A	

VISUAL INSPECTION
PHASE I
INSTRUMENTATION

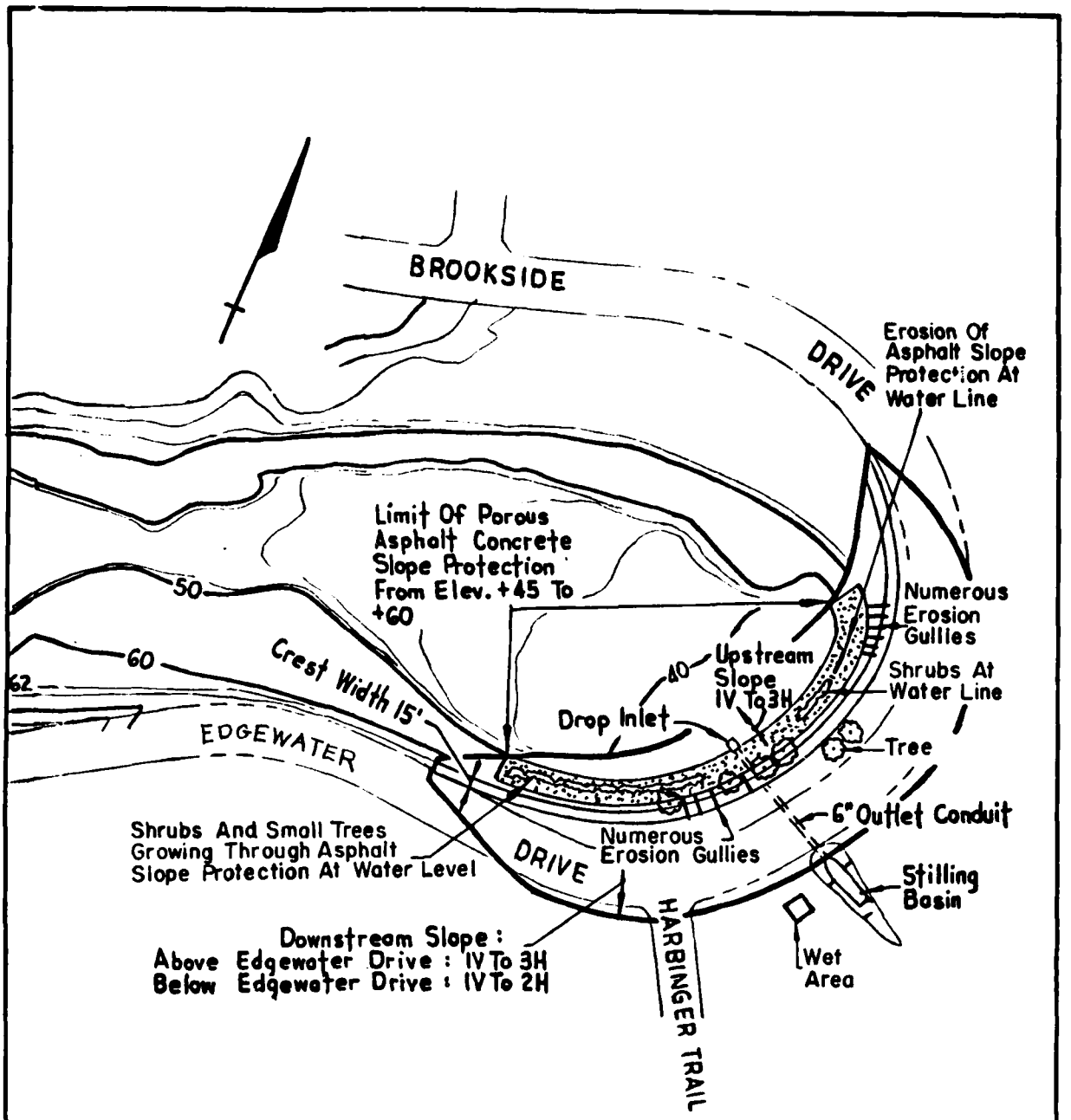
VISUAL EXAMINATION OF	OBSERVATIONS	REMARKS OR RECOMMENDATIONS
MONUMENTATION/SURVEYS	None	
OBSERVATION WELLS	None	
WEIRS	None	
PIEZOMETERS	None	
OTHER		

VISUAL INSPECTION
PHASE I
RESERVOIR

VISUAL EXAMINATION OF	OBSERVATIONS	REMARKS OR RECOMMENDATIONS
SLOPES	Generally well vegetated. Some deep gullies empty into west end of reservoir.	
SEDIMENTATION	Water is very clouded; probing with metal bar indicates as much as 3 feet of sediment on asphalt protection	
UPSTREAM RESERVOIRS	None	

VISUAL INSPECTION
PHASE I
DOWNSTREAM CHANNEL

VISUAL EXAMINATION OF	OBSERVATIONS	REMARKS OR RECOMMENDATIONS
CONDITION (OBSTRUCTIONS, DEBRIS, ETC.)	Marshy area with a small channel emptying into a tributary of Otter Point Creek.	
SLOPES	Mild stream slope	
APPROXIMATE NUMBER OF HOMES AND POPULATION	Four dwellings are situated parallel to and left of downstream channel approximately 10' above streambed. Approximately 1700' downstream from dam just downstream of Rt. 155 are a gas station and an auto parts store, both located in the flood plain	



PHASE I INSPECTION REPORT
NATIONAL DAM INSPECTION PROGRAM

EDGEWATER VILLAGE

EDGEWATER VILLAGE COMPANY

RESULTS OF

VISUAL INSPECTION

JULY 1980 PLATE A-1

APPENDIX B

ENGINEERING DATA CHECKLIST

PHASE I

APPENDIX B

CHECKLIST
ENGINEERING DATA
DESIGN, CONSTRUCTION, OPERATION
PHASE I

NAME OF DAM Edgewater Village

ID# NOI I.D. No Md-83

ITEM	REMARKS
AS-BUILT DRAWINGS	"Edgewater Village, Harford County, Maryland, Rolled Earth Dam," by Matz, Childs, and Associates, Inc. dated October 11, 1971, Sheets 1 of 6 through 6 of 6.
REGIONAL VICINITY MAP	A regional vicinity map is included as Plate E-1.
CONSTRUCTION HISTORY	See "Project History for Serene Lake, Edgewater Village, Harford County, Maryland" by Matz, Childs, and Associates, dated October 11, 1971.
TYPICAL SECTIONS OF DAM	See As-Built Drawings and Plate E-2 in appendix.
OUTLETS - PLAN - DETAILS - CONSTRAINTS - DISCHARGE RATINGS	For outlet plans and details, see As-Built Drawings. For discharge ratings, see Design Report.

CHECKLIST
ENGINEERING DATA
DESIGN, CONSTRUCTION, OPERATION
PHASE I

ITEM	REMARKS
RAINFALL/RESERVOIR RECORDS	None
DESIGN REPORTS	"Edgewater Village Dam and Feasibility Report" by Matz, Childs, and Associates, Inc. dated April 1970.
GEOLOGY REPORTS	Refer to Design Report
DESIGN COMPUTATIONS HYDROLOGY & HYDRAULICS DAM STABILITY SEEPAGE STUDIES	For hydrology and hydraulics, refer to Design Report and October 26, 1970 letter to Department of Water Resources, State of Maryland
MATERIALS INVESTIGATIONS BORING RECORDS LABORATORY FIELD	Refer to Design Report, Construction History, and As-Built Drawings

CHECKLIST
ENGINEERING DATA
DESIGN, CONSTRUCTION, OPERATION
PHASE I

ITEM	REMARKS
POST CONSTRUCTION SURVEYS OF DAM	None.
BORROW SOURCES	Unknown
MONITORING SYSTEMS	None.
MODIFICATIONS	None.
HIGH POOL RECORDS	None.

CHECKLIST
ENGINEERING DATA
DESIGN, CONSTRUCTION, OPERATION
PHASE I

ITEM	REMARKS
POST CONSTRUCTION ENGINEERING STUDIES AND REPORTS	See Construction History
PRIOR ACCIDENTS OR FAILURE OF DAM DESCRIPTION REPORTS	None
MAINTENANCE OPERATION RECORDS	None
SPILLWAY PLAN SECTIONS DETAILS	Refer to As-Built Drawings
OPERATING EQUIPMENT PLANS AND DETAILS	Refer to As-Built Drawings

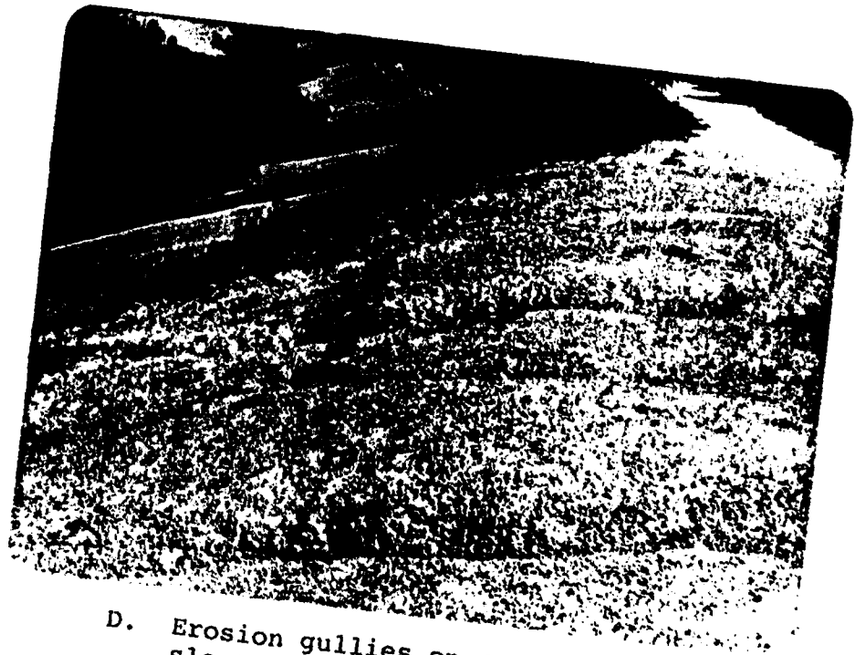
APPENDIX C

PHOTOGRAPHS

A. Upstream slope of dam and asphalt slope protection

B. Left end of downstream slope of dam

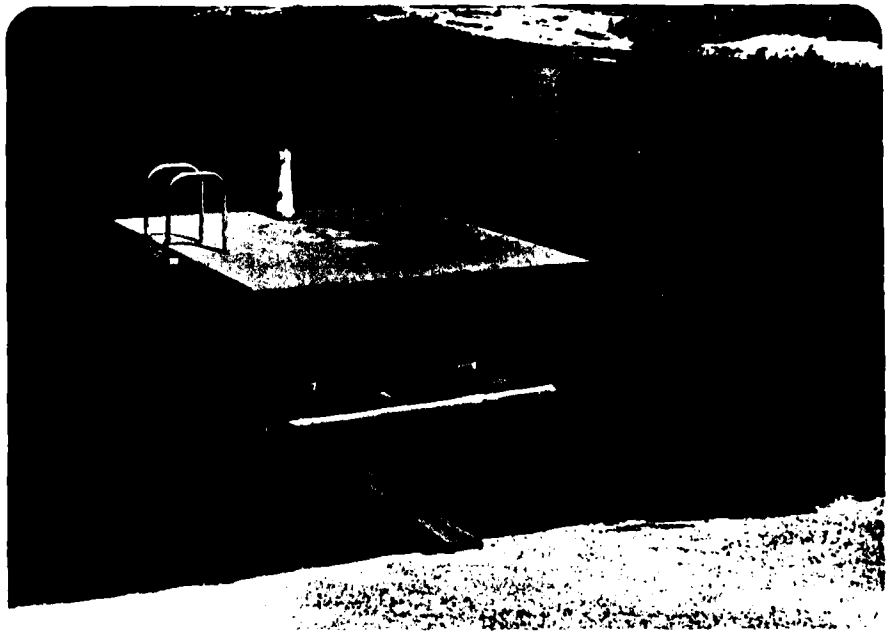
C. Northern shoreline of lake



D. Erosion gullies on upstream slope of dam

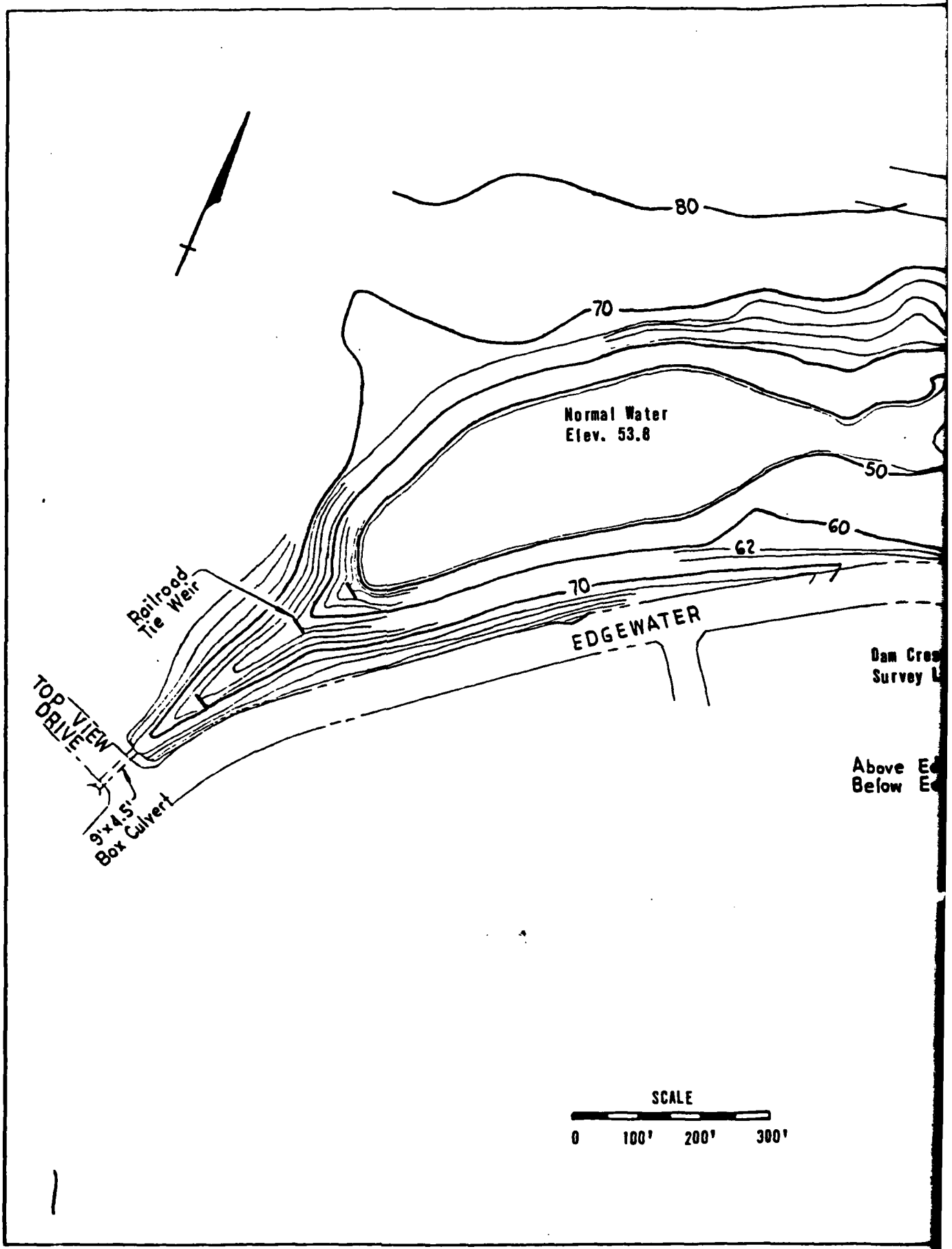
E. Erosion of asphalt slope protection along left half of dam

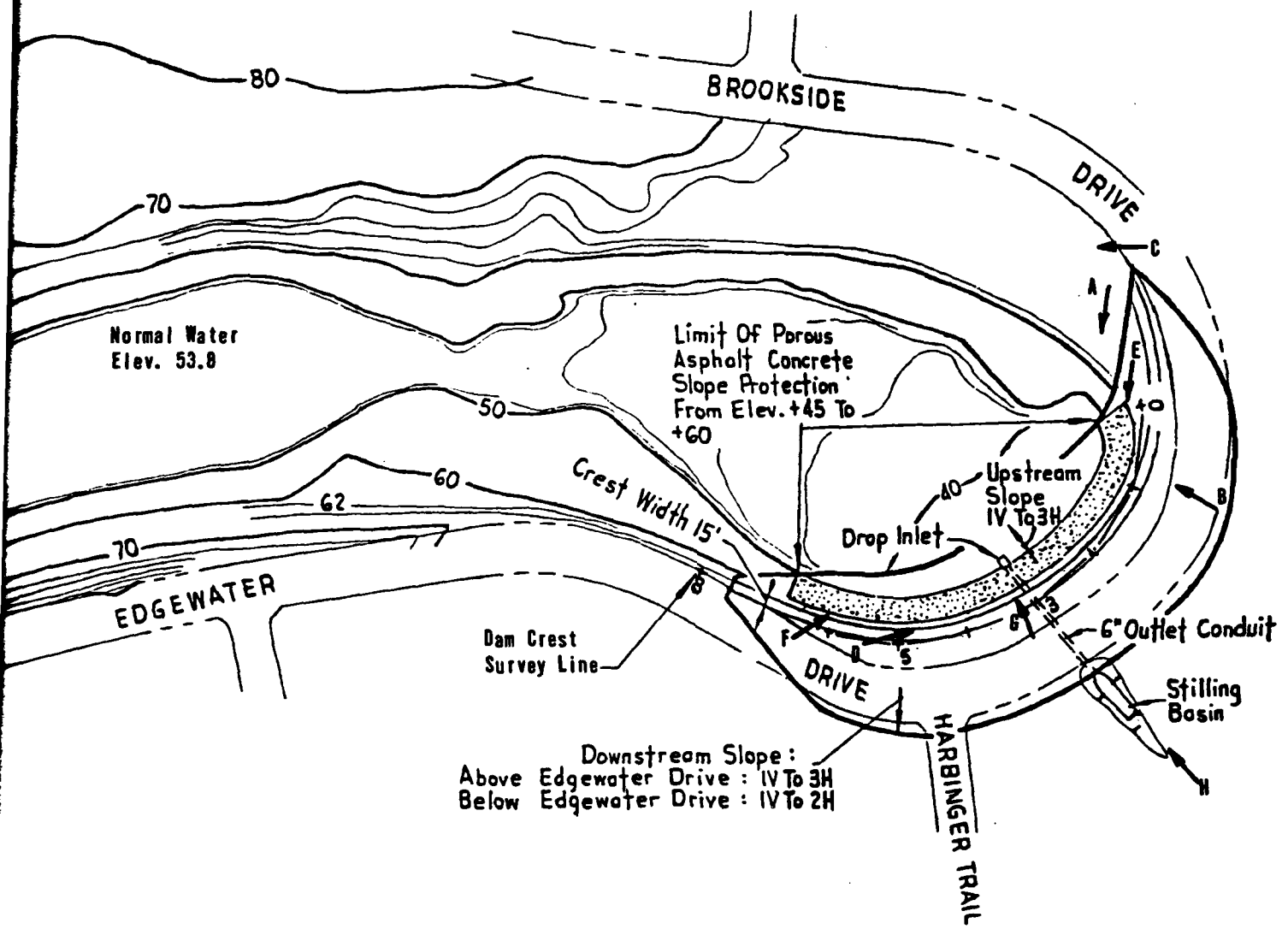
F. Evidence of sedimentation: here 2 feet of sediment has been deposited on the asphalt slope protection



G. "Morning Glory" overflow structure

H. Downstream conduit


80
70
Normal Water
Elev. 53.8
50
60
62
70
Railroad
Tie Weir
EDGEWATER
Dam Cres
Survey L
TOP OF VIEW
DRIVE
9'x4.5'
Box Culvert
Above E
Below E
SCALE
0
100'
200'
300'



← Camera Location And Direction

A Photograph Identification Letter

SCALE

0 100' 200' 300'

2

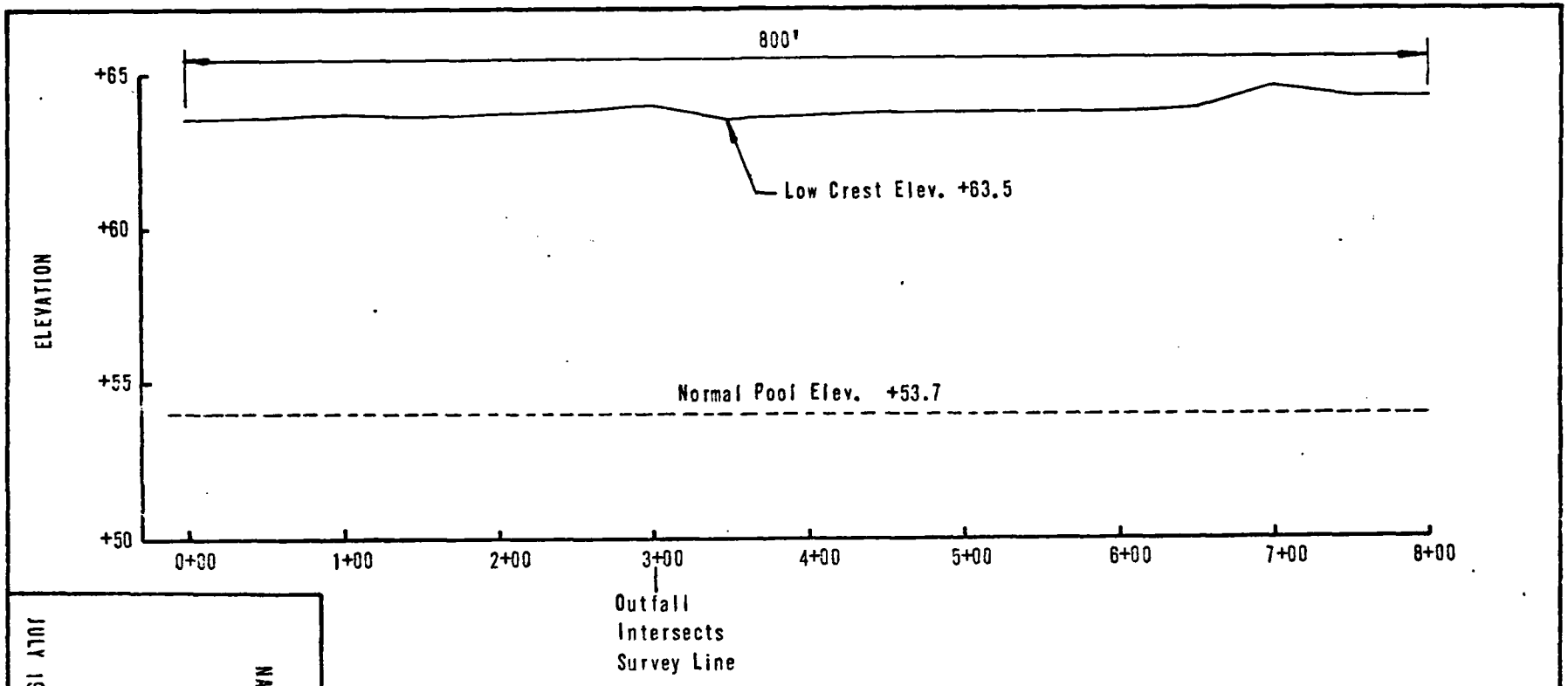
PHASE I INSPECTION REPORT
NATIONAL DAM INSPECTION PROGRAM

EDGEWATER VILLAGE

EDGEWATER VILLAGE COMPANY

GUIDE TO LOCATION
OF PHOTOGRAPHS

JULY 1980 PLATE C-1



DAM CREST PROFILE

(LOOKING DOWNSTREAM)

NOTE:

DAM CREST SURVEY STATIONS ARE SHOWN ON PLATE C-1

DATUM ELEV. IS INTERPOLATED FROM 50 SCALE CONTRACT DRAWINGS.

PHASE I INSPECTION REPORT
NATIONAL DAM INSPECTION PROGRAM

EDGEWATER VILLAGE

EDGEWATER VILLAGE ASSOC.

DAM CREST SURVEY

JULY 1980

PLATE C-2

APPENDIX D

HYDROLOGY AND HYDRAULICS

BASE DATA FOR DETERMINATION OF PROBABLE MAXIMUM FLOOD, UNIT HYDROGRAPH AND INFLOW HYDROGRAPHS

Name of Dam: Edgewater Village NDI-ID MD-83

Unit Hydrograph Parameters

Watershed Drainage Area	0.335 sq. miles
Main Channel Length L	1.04 miles
Main Channel to Centroid Length, Lca	0.54 miles
Lag Time $tp = Ct (L \times Lca)^{0.3}$	1.0 hours
Basin Zone Location from Unit Hydrograph Coefficient Map	35
Basin Coefficients	
Cp_1	0.70
Ct_1	1.20

Inflow Hydrograph Parameters[1]

Base Flow at Start of Storm	1.5 c.f.s./sq. mile
Initial Rainfall Loss	1 inch
Uniform Rainfall Loss	0.05 inches/hour
Ratio of Peak Discharge Used to Compute Base Flow which Deviates from Hydrograph Falling Limb	0.05
Ratio of Recession Flow occuring 10 Tabulation Intervals Later	2.0

Rainfall Data[2]

Probable Maximum Precipitation Index for 24 hours and 200 square miles	24 inches
Percentage Adjustments of PMP for Drainage Area	
6 hour storm	112%
12 hour storm	123%
24 hour storm	132%

---

[1] Basin Coefficients and Hydrograph Data established by Corps of Engineers Baltimore District

[2] *Hydrometeorological Report 33*, Corps of Engineers, 1956.

Tabulation of Reservoir Area and Storage Vs. Elevation[1]

Name of Dam: Edgewater Village NDI-ID MD-83

Pool Elevation feet above m.s.l.	Surface[1] Area acres	Reservoir[1] Storage acre-feet
40	0.52	0.52
42	1.56	2.60
44	2.66	6.82
46	3.56	13.04
48	6.79	23.39
50	7.19	37.37
52	7.68	52.07
54	8.55	68.30
56	9.60	86.45
58	10.37	106.42
59.2 (Freeboard Flood Level)	10.9[3]	119.4[3]
60	11.24	128.03
62	11.96	151.23
63.5 (Top of Dam)	12.7[3]	171[3]
64	12.99	177.18
66	15.8[2]	206.0[2]

---

[1] Source: Matz, Childs and Associates Letter Report dated October 23, 1970

[2] Area from 2000 foot scale U.S.G.S. map and computed by Rummel, Klepper & Kahl

[3] Computed by Rummel, Klepper & Kahl.

Spillway/Outlet Rating Curves

Name of Dam: Edgewater Village NDI-ID MD-83

Pool Elevation feet above m.s.l.[2]	Weir Control[1] c.f.s.	Conduit Control[2] c.f.s.	Discharge c.f.s.
54	0	0	0
55	120	810	120
56	255	840	255
57	630	870	630
58	950	900	900
59	1345	930	930
60	1780	960	960
61		990	990
62		1020	1020
63		1050	1050
64		1080	1080
65		1110	1110

Calculation Basics

Outflow Culvert

$$Q = A\sqrt{2g}\left[\frac{H_L}{1+K_e+\frac{29.1(n)^2L}{r^{4/3}}}\right]^{0.5}$$

$$= 56\sqrt{64.4}\left[\frac{H_L}{1+0.1+\frac{29.1(0.013)^2180}{1.715}}\right]^{0.5}$$

where H_L = Difference in elevation between dam water surface and centerline of outlet culvert

[1] Source: Edgewater Village Dam Feasibility Report, Matz, Childs and Associates, Inc., April 1970

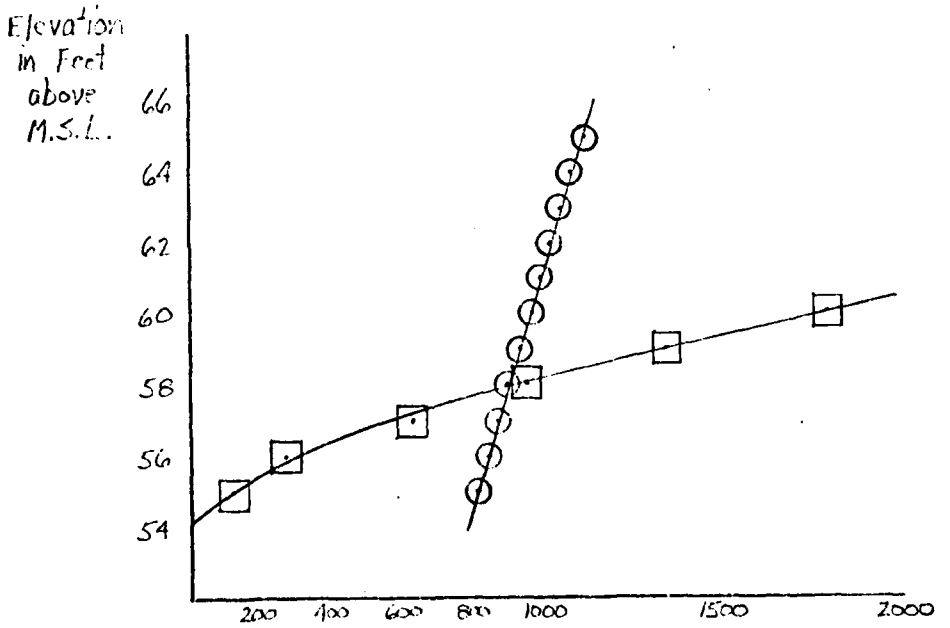
[2] Computed by Rummel, Klepper & Kahl

BY _____ DATE July 1980 SUBJECT _____

CHKD. BY _____ DATE _____ Edgewater Village

_____ Outlet Works Rating Curves

Culvert and Weir Flow vs. Edgewater Village Water Levels



```
FLOOD HYDROGRAPH PACKAGE (HEC-1)
DAM SAFETY VERSION     JULY 1978
LAST MODIFICATION  06 FEB 80
```

```
A1       SNYDER UNIT HYDROGRAPH, FLOOD ROUTING AND DAM OVERTOPPING ANALYSES FOR
A2       20%, 30%, 40%, 50%, 60%, 70%, 80%, 90% AND 100% PMF AT EDGEWATER VILLAGE DAM.
A3       NDI-I D MOSS  COMM NO. 580-21-6D
B     100        0       15        0        0        0        0        0       -4        0
B1      5
J       1        9        1
J1  0.20     0.30     0.40     0.50     0.60     0.70     0.80     0.90     1.00
K       0        1                          0        0        1        0
K1       CALCULATION OF SNYDER INFLOW HYDROGRAPH TO EDGEWATER DAM
M       1        1    0.335                0.335        0                          1
P       0       24      112      123      132                          1     0.05
T
W     1.0     0.70
X    -1.5    -0.05      2.0
K       1        2
K1       ROUTED FLOWS THROUGH EDGEWATER VILLAGE DAM
Y                                          1        1                 69.1       -1
Y1      1
Y4  54.19    54.59    55.09    56.09    57.09    58.09    59.09    60.09       65
Y5    3.8       72      120      338      625      900      925      960     1115
$S   0.52     2.60     6.82    13.04    23.39    37.37    52.07    68.30    86.45   106.42
$S  128.03   151.23   177.18   206.0
$E     40       42       44       46       48       50       52       54       56       58
$E     60       62       64       66
$$  54.09
$D  63.50     2.63      1.5      100
$L    100      600      700      750      800
$V   63.5    63.75     64.0     64.5    64.75
K      99
```

FLOOD HYDROGRAPH PACKAGE (HEC-1)
DAM SAFETY VERSION JULY 1978
LAST MODIFICATION 06 FEB 80

SNYDER UNIT HYDROGRAPH, FLOOD ROUTING AND DAM OVERTOPPING ANALYSES FOR
20%, 30%, 40%, 50%, 60%, 70%, 80%, 90% AND 100% PMF AT EDGEWATER VILLAGE DAM.
NDI-1 D MDE3 COMM. NO. 580-21-6D

JOB SPECIFICATION

NQ	NHR	NMIN	IDAY	IHR	IMIN	METRC	IPLT	IPRT	NSTAN
100	0	15	0	0	0	0	0	-4	0
			JOPER	NWT	LROPT	TRACE			
			5	0	0	0			

MULTI-PLAN ANALYSES TO BE PERFORMED
NPLAN= 1 NRTIO= 9 LRTIO= 1

PTIOS= 0.20 0.30 0.40 0.50 0.60 0.70 0.80 0.90 1.00

****

SUB-AREA RUNOFF COMPUTATION

CALCULATION OF SNYDER INFLOW HYDROGRAPH TO EDGEWATER DAM

ISTAQ	ICOMP	IECON	ITAPE	JPLT	JPRT	INAME	ISTAGE	IAUTO
1	0	0	0	0	0	1	0	0

HYDROGRAPH DATA

IHYDG	IUHG	TAREA	SNAP	TRSDA	TRSPC	RATIO	ISNOW	ISAME	LOCAL
1	1	0.33	0.00	0.33	0.00	0.000	0	1	0

PRECIP DATA

SPFE	PMS	R6	R12	R24	R48	R72	R96
0.00	24.00	112.00	123.00	132.00	0.00	0.00	0.00

TRSPC COMPUTED BY THE PROGRAM IS 0.800

LOSS DATA

LROPT	STRKR	DLTKR	RTIOL	ERAIN	STRKS	RTIOK	STRTL	CNSTL	ALSMX	RTIMP
0	0.00	0.00	1.00	0.00	0.00	1.00	1.00	0.05	0.00	0.00

UNIT HYDROGRAPH DATA
TP= 1.00 CP=0.70 NTA= 0

RECESSION DATA
STRTQ= -1.50 QRCSN= -0.05 RTIOR= 2.00

UNIT HYDROGRAPH 17 END-OF-PERIOD ORDINATES, LAG= 0.99 HOURS, CP= 0.70 VOL= 1.00

17.	60.	111.	146.	149.	119.	82.	56.	38.	26.
18.	12.	9.	6.	4.	3.	2.			

END-OF-PERIOD FLOW

0 MO. DA	HR. MN	PERIOD	RAIN	EXCS	LOSS	COMP Q
		SUM	25.34	23.49	1.86	20341.
			(644.)	(597.)	(47.)	(575.99)

********** ********** ********** ********** **********

HYDROGRAPH ROUTING

ROUTED FLOWS THROUGH EDGEWATER VILLAGE DAM

ISTAG	ICOMP	IECON	ITAPE	JPLT	JPRT	INAME	ISTAGE	IAUTO
2	1	0	0	0	0	0	0	0

ROUTING DATA

GLOSS	CLOSS	AVG	IRES	ISAME	IOPT	IPMP	LSTR
0.0	0.000	0.00	1	1	0	0	0

NSTPS	NSTDL	LAG	AMSKK	X	TSK	STORA	ISPRAT
1	0	0	0.000	0.000	0.000	69.	-1

STAGE	54.19	54.59	55.09	56.09	57.09	58.09	59.09	60.09	65.00
FLOW	3.80	72.00	120.00	338.00	625.00	900.00	925.00	960.00	1115.00
CAPACITY=	1.	3	7	13.	23.	37.	52.	68.	86.	106.
	126.	151.	177.	206					
ELEVATION=	40.	42.	44.	46.	48.	50.	52.	54.	56.	58.
	60.	62.	64.	66.					

CREL	SPWID	COGW	EXPW	ELEVL	COGL	CAREA	EXPL
54.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0

DAM DATA

TOPEL	COGD	EXPD	DAMWID
63.5	2.6	1.5	100.

CREST LENGTH AT OR BELOW ELEVATION	100.	600.	700.	750.	800.
	63.5	63.8	64.0	64.5	64.8

PEAK OUTFLOW IS 243. AT TIME 17.00 HOURS

PEAK OUTFLOW IS 371. AT TIME 17.00 HOURS

PEAK OUTFLOW IS 502. AT TIME 17.00 HOURS

PEAK OUTFLOW IS 630. AT TIME 17.00 HOURS

PEAK OUTFLOW IS 754 AT TIME 17.00 HOURS

PEAK OUTFLOW IS 878. AT TIME 17.00 HOURS

PEAK OUTFLOW IS 914. AT TIME 17.00 HOURS

PEAK OUTFLOW IS 945 AT TIME 17.25 HOURS

PEAK OUTFLOW IS 976. AT TIME 17.25 HOURS

********** ********** ********** ********** **********

PEAK FLOW AND STORAGE (END OF PERIOD) SUMMARY FOR MULTIPLE PLAN-RATIO ECONOMIC COMPUTATIONS
FLOWS IN CUBIC FEET PER SECOND (CUBIC METERS PER SECOND)
AREA IN SQUARE MILES (SQUARE KILOMETERS)

OPERATION	STATION	AREA	PLAN	RATIOS APPLIED TO FLOWS RATIO 1 0.20	RATIO 2 0.30	RATIO 3 0.40	RATIO 4 0.50	RATIO 5 0.60	RATIO 6 0.70	RATIO 7 0.80	RATIO 8 0.90	RATIO 9 1.00
HYDROGRAPH AT	1	0.33 (0.87)	1	277. (7.84)	415. (11.75)	553. (15.67)	692. (19.59)	830. (23.51)	969. (27.43)	1107. (31.34)	1245. (35.26)	1384 (39.18)
ROUTED TO	2	0.33 (0.87)	1	243. (6.88)	371. (10.51)	502 (14.22)	630. (17.83)	754. (21.35)	878. (24.87)	914. (25.88)	945. (26.75)	978. (27.69)

SUMMARY OF DAM SAFETY ANALYSIS

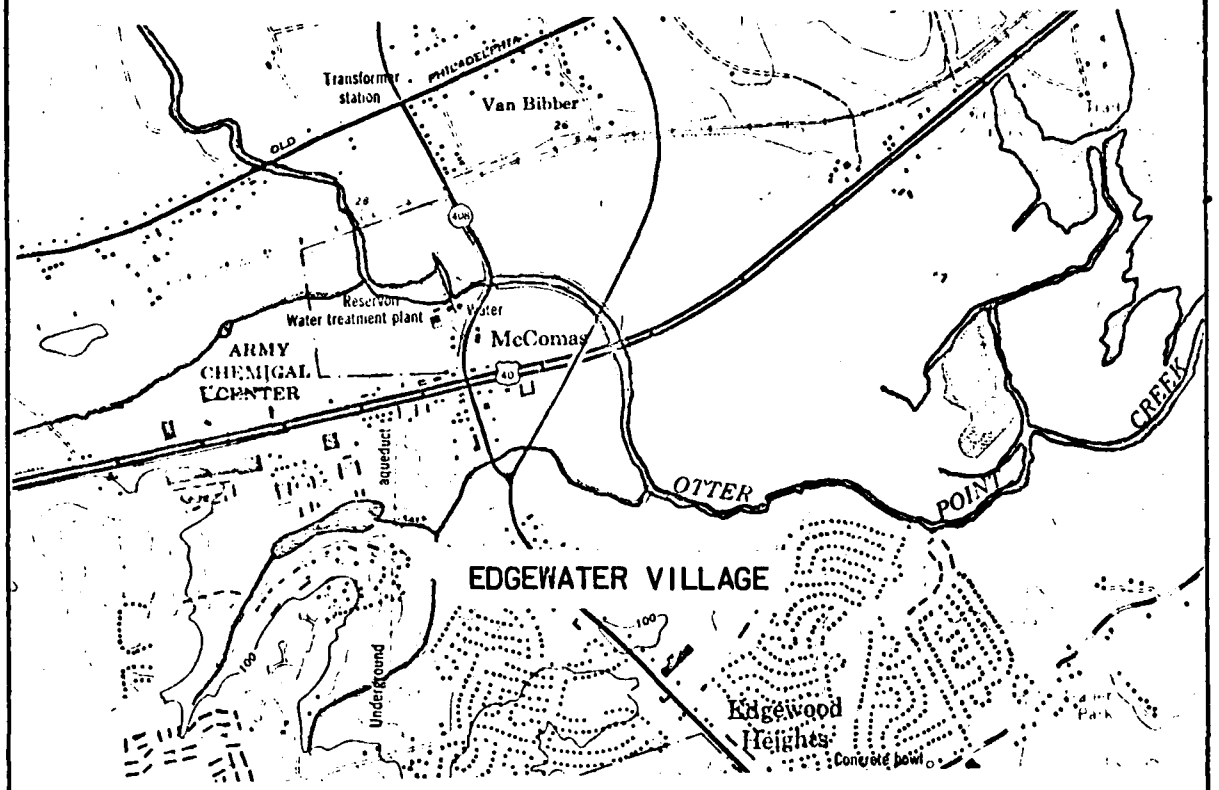
PLAN 1

	INITIAL VALUE	SPILLWAY CREST	TOP OF DAM
ELEVATION	54.09	54.09	63.50
STORAGE	69.	69.	171.
OUTFLOW	4.	4.	1068.

RATIO OF PMF	MAXIMUM RESERVOIR W.S ELEV	MAXIMUM DEPTH OVER DAM	MAXIMUM STORAGE AC-FT	MAXIMUM OUTFLOW CFS	DURATION OVER TOP HOURS	TIME OF MAX OUTFLOW HOURS	TIME OF FAILURE HOURS
0.20	55.65	0.00	83.	243.	0.00	17.00	0.00
0.30	56.21	0.00	88.	371.	0.00	17.00	0.00
0.40	56.66	0.00	93.	502.	0.00	17.00	0.00
0.50	57.11	0.00	97.	630.	0.00	17.00	0.00
0.60	57.56	0.00	102.	754.	0.00	17.00	0.00
0.70	58.01	0.00	107.	878.	0.00	17.00	0.00
0.80	58.64	0.00	113.	914.	0.00	17.00	0.00
0.90	59.65	0.00	124.	945.	0.00	17.25	0.00
1.00	60.65	0.00	136.	978.	0.00	17.25	0.00

APPENDIX E

PLATES



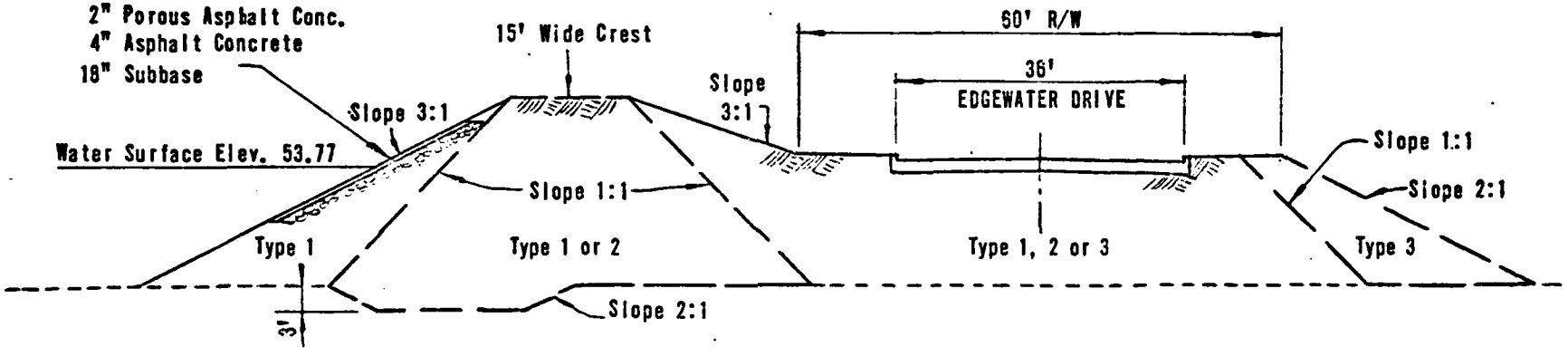
SCALE

0 ½ MI. 1 MI.

EDGEWATER VILLAGE

LOCATION MAP

PLATE E-1

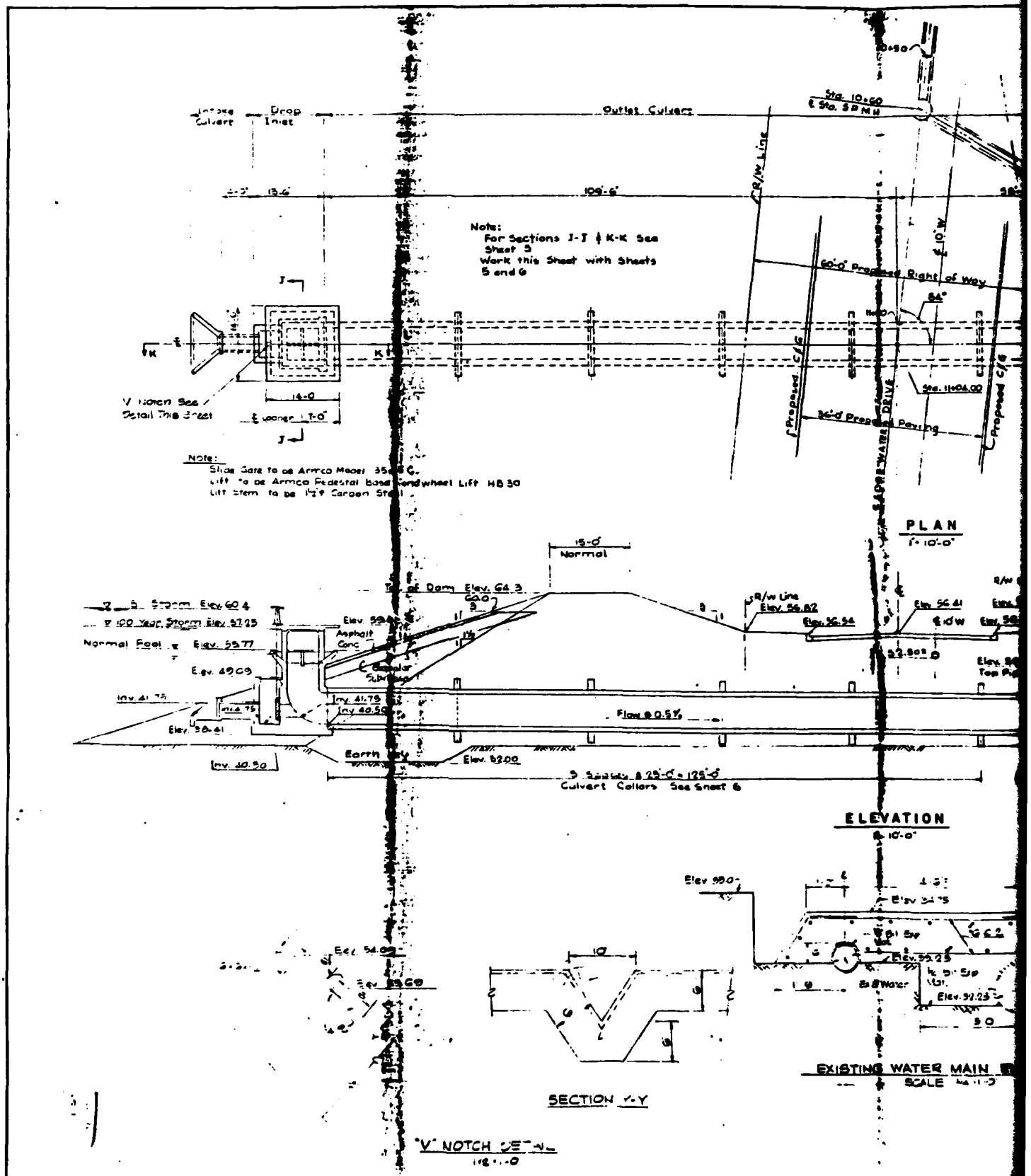


TYPE	FILL MATERIAL UNIFIED SOIL CLASSIFICATION
1	GC, CM, SC, SM, CL, ML
2	CH, MH
3	GW, GP, SW (gravelly) SP (gravelly)

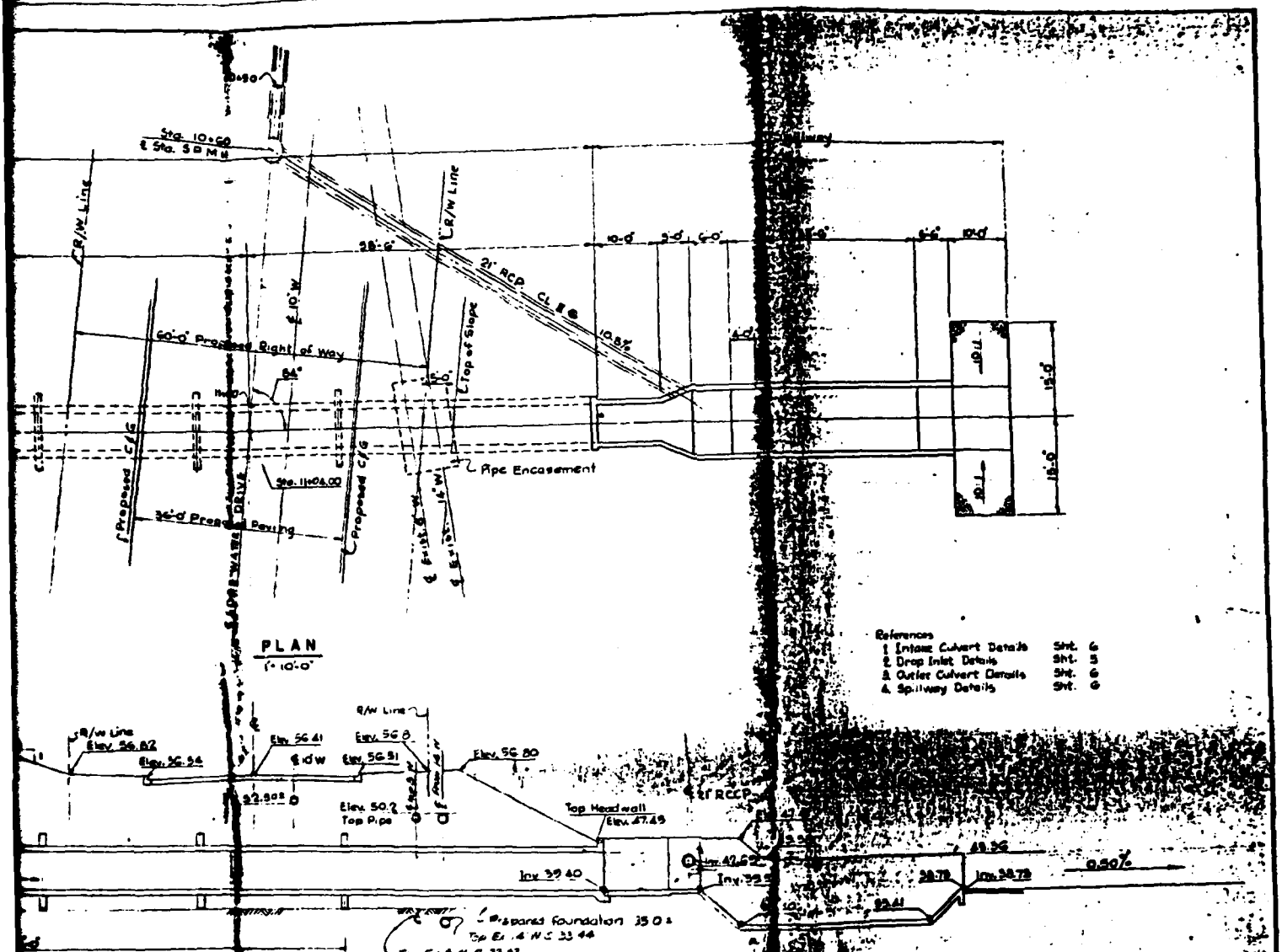
Scale 1" = 20'

TYPICAL SECTION
EDGEWATER VILLAGE
FROM AS BUILT DRAWING
DATED OCT. 11, 1971
SHEET 3 OF 6

PLATE E-2



HARFORD COUNTY MARYLAND	HARFORD COUNTY DEPARTMENT OF PUBLIC WORKS	HARFORD COUNTY METROPOLITAN COMMISSION	**DROP INLET SPILLWAY**



NOTE: Pipe Encasement To extend 3'-0 each Side of Drop Culvert

References

1. Intake Culvert Details	Sht.	6
2. Drop Inlet Details	Sht.	5
3. Outlet Culvert Details	Sht.	6
4. Spillway Details	Sht.	6

GENERAL NOTES:

1. SPECIFICATIONS: [illegible] and S.B.C. Specifications and Errata to Specifications dated Mar., 1968 and Special Provisions for Materials and Construction AASHO. Standard Specifications for Highway Bridges dated 1969 for design and [illegible] AASHO. Interim Specifications.
2. LOADING: Live Loading H.S. 20-44.
3. CONCRETE: Class "A" Concrete having a minimum compressive strength of 3,000 psi. @ 28 Days and an allowable stress of fc = 1200 psi.
4. REINFORCING STEEL: A.S.T.M. Designation A615 Grade 40. All splices shall be lapped a minimum of 24 Bar Diameters. Minimum cover shall be 2" unless otherwise noted.
5. CHAMFER: All exposed corners shall be chamfered ¾" x ¾" with milled chamfer strips unless otherwise noted.
6. DAMPPROOFING: Dampproofing shall be applied to those portions of the outside surface sidewalls, top of top slab, rear faces of headwalls and wingwalls that are in contact with earth, and full face of contraction Jts.
7. MEMBRANE WATERPROOFING: All construction joints above the normal watersurface with earth on one side and air on the other shall be waterproofed by the application to the earth side of the joint of 2 ply membrane 18" wide centered on the joint. No membrane waterproofing on contraction and/or expansion joints.
8. EQUIPMENT: No equipment shall be allowed to pass over the box culvert until backfill has attained a minimum height of 2'-0" above top of top slab.
9. BEARING PRESSURE: For design purposes bearing pressure does not exceed 1½ Ton per sq. ft.

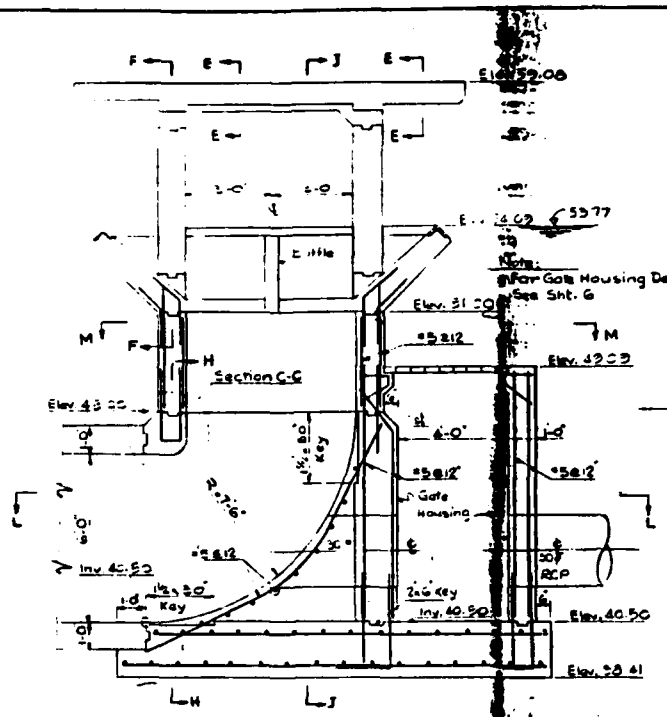
AS BUILT DRAWINGS
BY
MATZ, CHILDS & ASSOC., INC.
DATE: 10-11-71

DROP INLET SPILLWAY

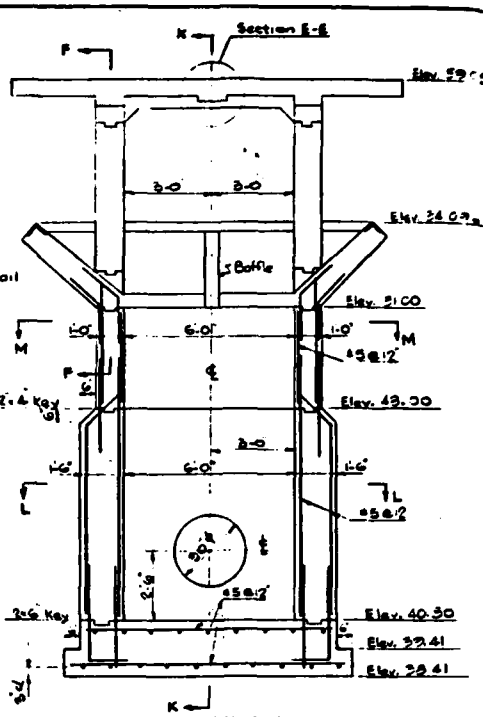
ENGINEER
MATZ, CHILDS & ASSOC. INC.
1020 CROMWELL BRIDGE RD.
BALTIMORE, MARYLAND 21204

DESIGNED	J.J.M.	SCALE	TAX MAP
TRACED	R.W.P.		PARCEL SHEET
CHECKED	E.E.M.		NO. 4 OF 6

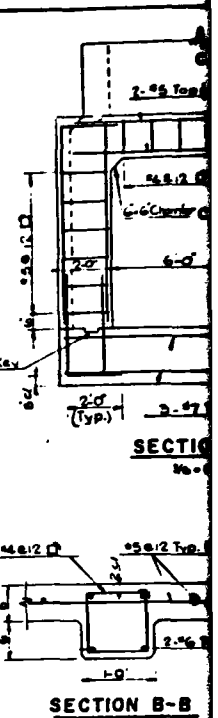
PLATE E-9

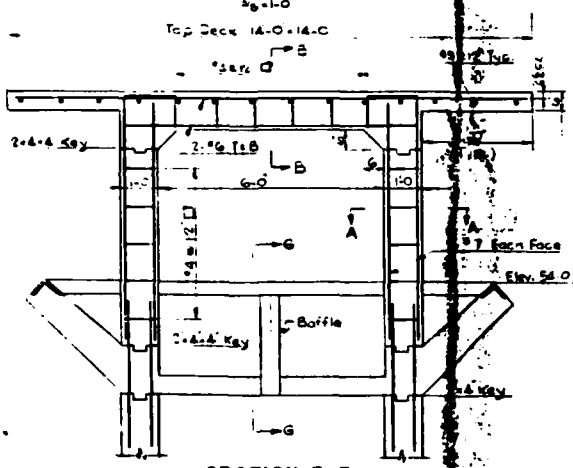


SECTION K-K



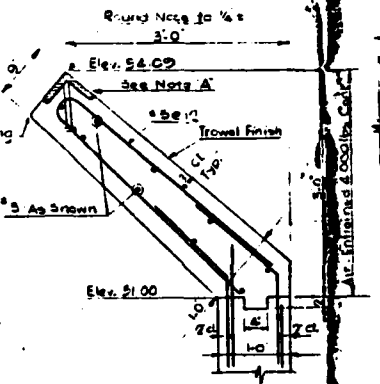
SECTION J-J





SECTION F-F

Note: A
L Gr Grade Alloy 6061 T-6 Aluminum Classification S Extrusion per J 78 Jul. Anchors to be 3/8 x 6 recessed to 1 1/2 x 1/2 6061 Aluminum Coat Underside of L & Anchors with Alkali Resisting Paint before pouring Concrete.

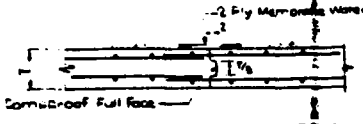


SECTION G-G

Dampproof Full Face

CONTRACTION JOINT DETAIL

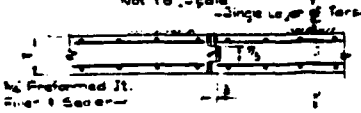
Not to Scale



Dampproof Full Face

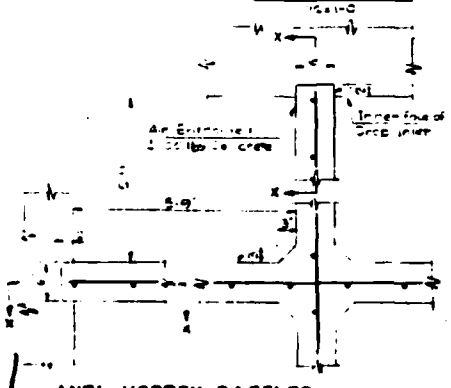
CONSTRUCTION JOINT DETAIL

Not to Scale

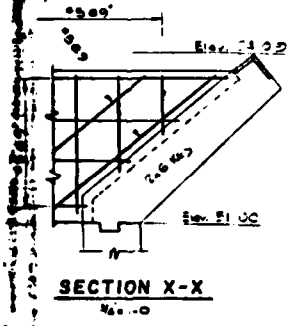


EXPANSION JOINT DETAIL

Not to Scale



ANTI-VORTEX BAFFLES



SECTION X-X

HARFORD COUNTY MARYLAND	HARFORD COUNTY DEPARTMENT OF PUBLIC WORKS	HARFORD COUNTY METROPOLITAN COMMISSION	HARFORD COUNTY DIRECTOR OF SANITARY FACILITIES	DROP INLET DET

DROP INLET DETAILS

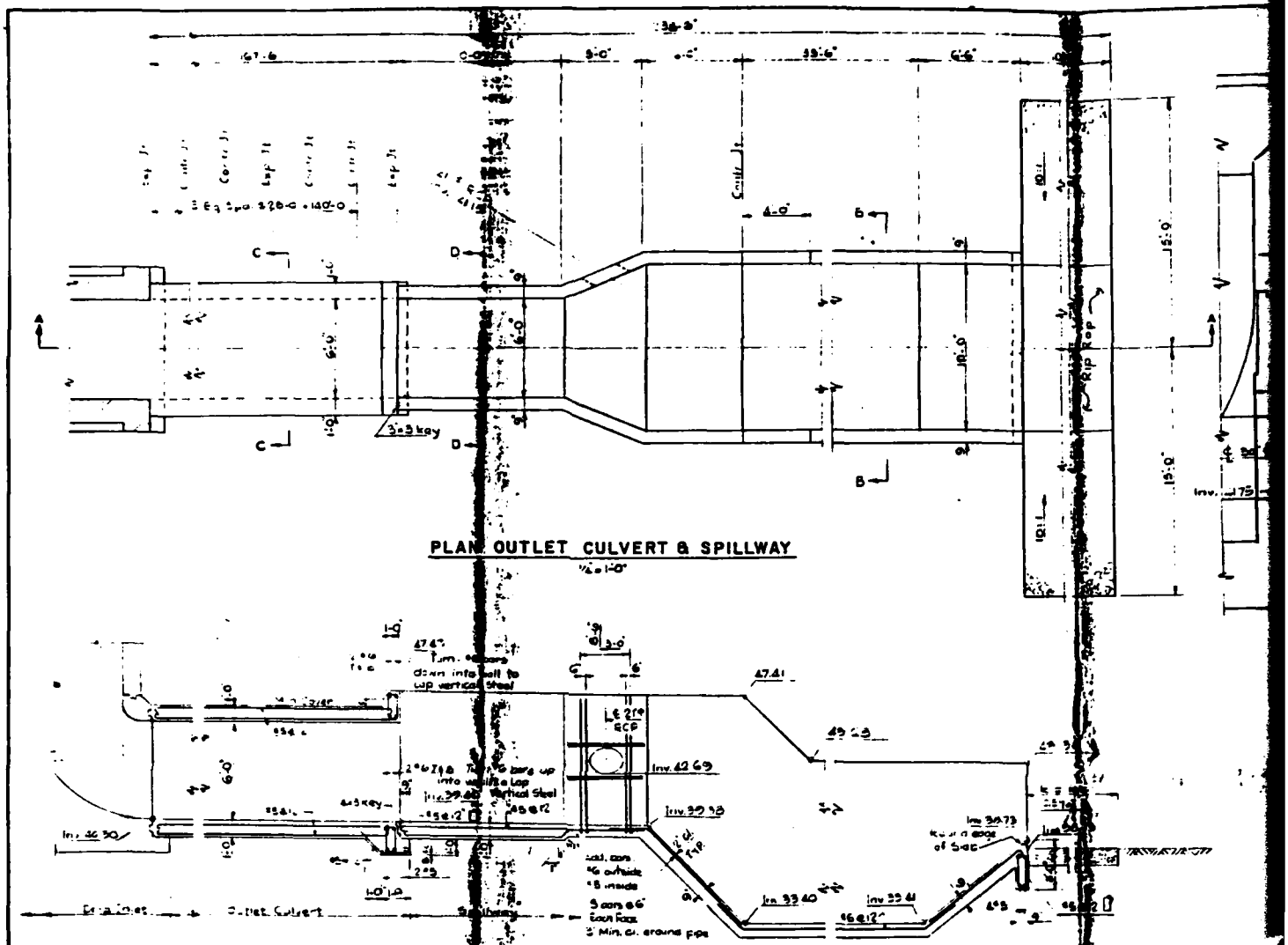
ENGINEER
MATZ, CHILDS & ASSOC., INC.
1020 CROMWELL BRIDGE RD.
BALTIMORE, MARYLAND 21204

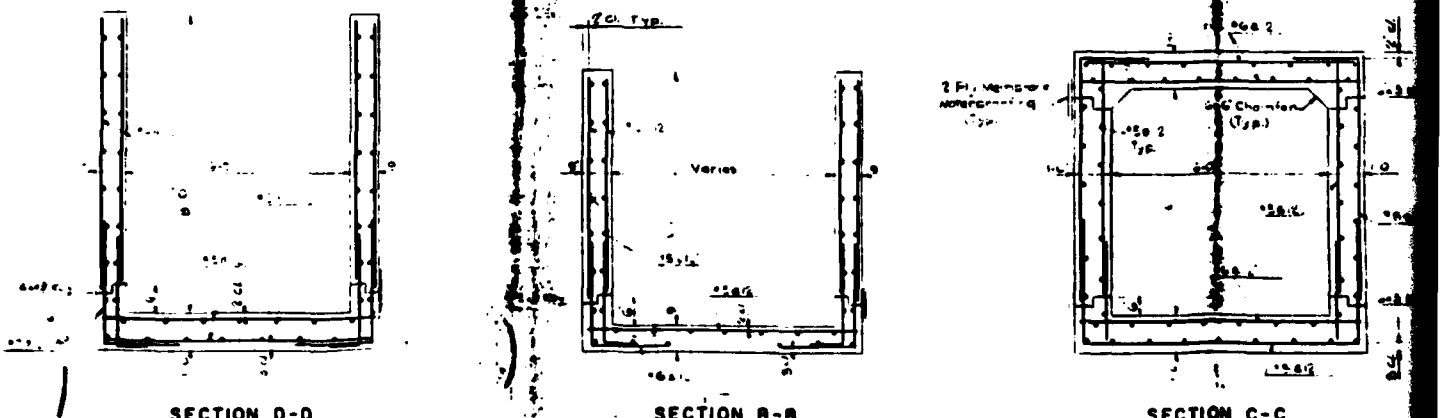
DESIGNED J.J.M.
DRAWN S.V.A.
CHECKED F.E.M.

SCALE

TAX MAP
POSITION SHEET
SHEET NO. 3 OF 6

NO.
FILE





HARFORD COUNTY MARYLAND	HARFORD COUNTY DEPARTMENT OF PUBLIC WORKS Date	HARFORD COUNTY METROPOLITAN COMMISSION Date	HARFORD COUNTY DIRECTOR OF SANITARY FACILITIES Date	INTAKE & OUTLET CULVERTS

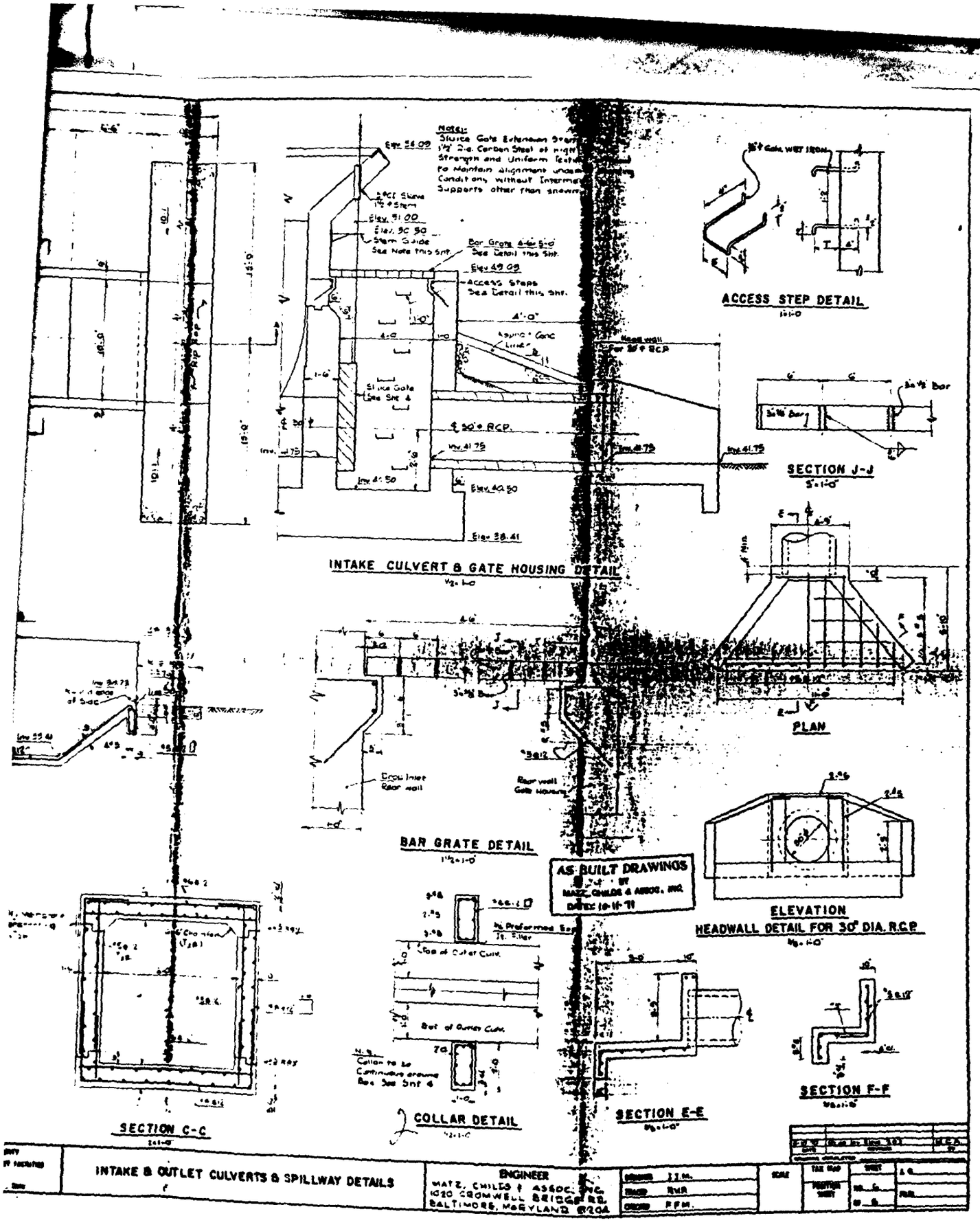

ACCESS STEP DETAIL
SECTION J-J
INTAKE CULVERT & GATE HOUSING DETAIL
PLAN
BAR GRATE DETAIL
AS-BUILT DRAWINGS
ELEVATION
HEADWALL DETAIL FOR 30" DIA. R.C.P.
SECTION C-C
COLLAR DETAIL
SECTION E-E
SECTION F-F
INTAKE & OUTLET CULVERTS & SPILLWAY DETAILS
ENGINEER
MATZ, CHILDS & ASSOC. INC.
1020 CROMWELL BRIDGE RD.
BALTIMORE, MARYLAND 21204

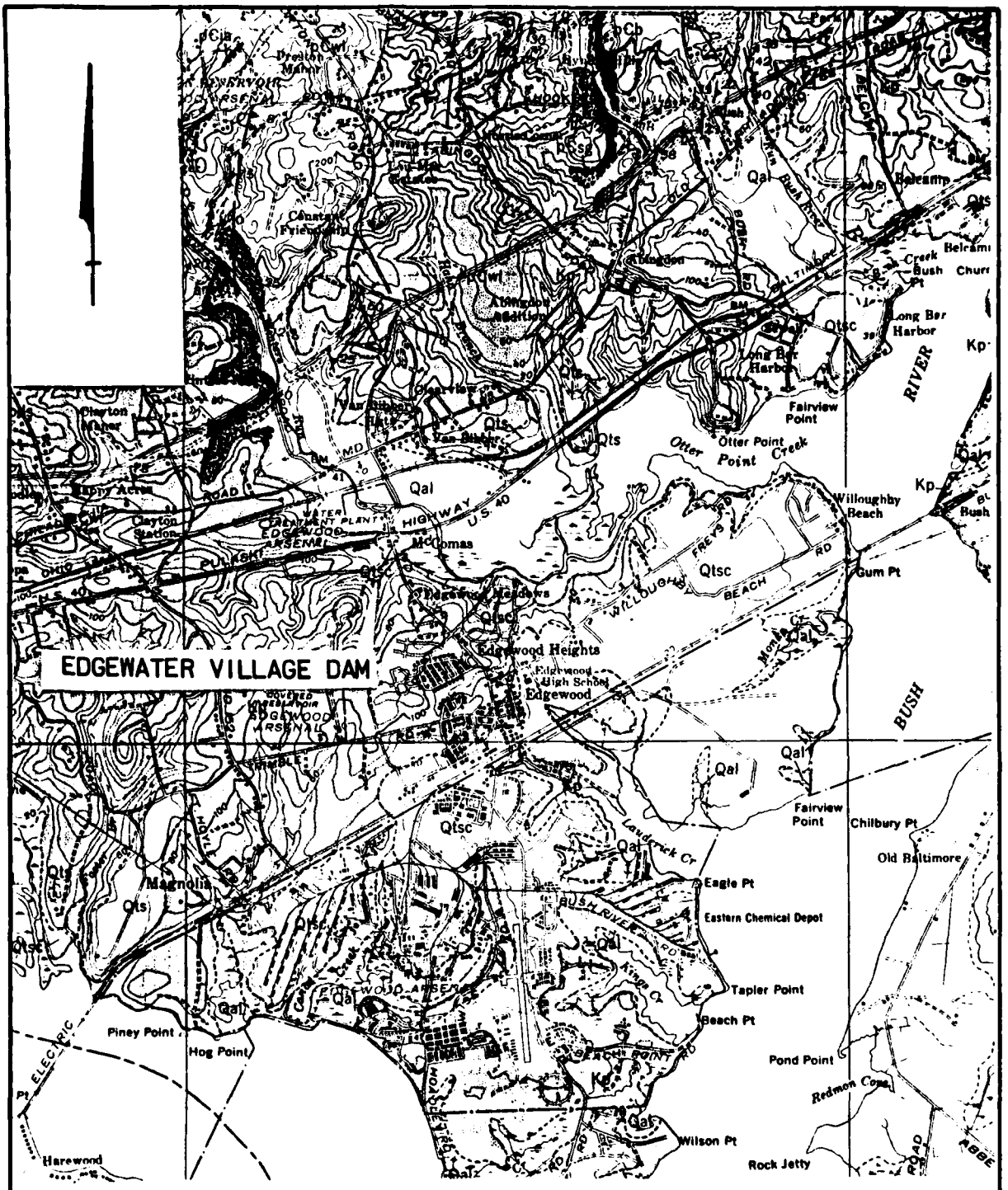
PLATE E-5

APPENDIX F

GEOLOGY

EDGEWATER VILLAGE DAM
APPENDIX F
REGIONAL GEOLOGY

The Edgewater Village Dam is situated on the unindurated sediments of the Cretaceous Potomac Group, which includes interbedded sand, silty clay and clayey silt and, less commonly, gravelly sand. These sediments of the Coastal Plain Province lie unconformably on the Paleozoic crystalline rocks outcropping one to two miles northwest of the dam site. The Potomac Group deposits thicken to the southeast, and dip very slightly (less than 1^{o}) in the same direction. Thickness of the sediments in the vicinity of the dam range from 50 to 400 feet.



SCALE

0 1 MI. 2 MI.

REFERENCE:

GEOLOGIC MAP OF HARFORD COUNTY, PREPARED BY STATE OF MARYLAND, MARYLAND GEOLOGIC SURVEY, DATED 1968

EDGEWATER VILLAGE DAM

GEOLOGY MAP

RUMMEL, KLEPPER & KAHL

LEGEND

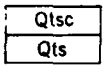
Setters Formation

pt sq, quartzite member, *sugary muscovite quartzite*

pCsg, mica-gneiss member, *well-bedded psammitic gneiss and schist containing quartz, microcline, plagioclase, biotite, and muscovite. Characterized by a high ratio of microcline to plagioclase, which distinguishes it from microcline-poor, but otherwise similar rocks of the Wissahickon Formation.* sm, *marble and calc-silicate schist*

Potomac Group

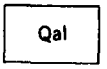
White to pale-gray quartz sand, locally stained orange brown; gravel common in updip areas. Small-scale trough and planar cross-stratification well-developed in coarse beds. Contains thick lenses of dark-gray, massive, very lignitic and silty clay, and bright red and yellow clay. Large spheroidal to discoidal masses of dark-brown to pale-gray siderite occur locally in the dark clays. Lignitized plant and tree remains, some several feet long, common



Talbot Formation

Qtsc, *pale- to moderate-gray silt, dark-brown where less weathered; contains abundant clay and some fine sand. Iron oxide staining and weak cementation common. Crudely stratified to massive*

Qts, *pale-gray- to dark-gray-brown graywacke sand interbedded with thick lenses of locally bouldery gravel. Pebbles of metamorphic rocks abundant in gravel. Crossbedding irregularly developed. Locally contains thick beds of massive dark-gray very clayey silt which weather pale greenish gray; leaf impressions common*



Alluvium

Chiefly micaceous silt and clayey sand. Alluvium and colluvium in flood plain and valley fill deposits. In the north, deposits reflect bedrock composition; in the south, deposits consist of reworked Coastal Plain sediments

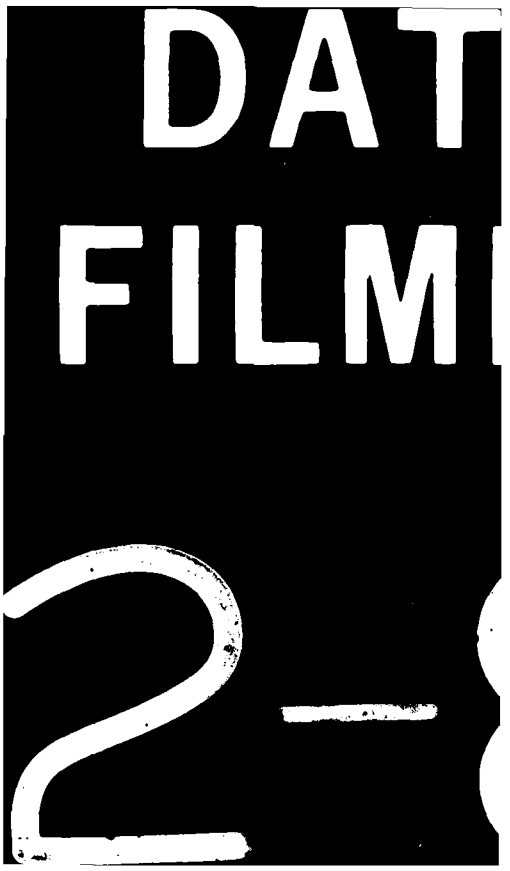
REFERENCE:

LOGIC MAP OF HARFORD COUNTY,
PREPARED BY STATE OF MARYLAND,
MARYLAND GEOLOGIC SURVEY.

EDGEWATER VILLAGE DAM

GEOLOGY MAP

RUMMEL, KLEPPER & KAHL


DAT
FILM
2-